REMEDIATION SYSTEM UPGRADE FOR THE SECO PRODUCTS FACILITY WASHINGTON, MISSOURI

April 15, 1997

Z-370-02

Prepared for: Hussmann Corporation
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Bridgeton, Missouri

Prepared by: Shannon & Wilson, Inc.
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SEATTLE
RICHLAND
FAIRBANKS
ANCHORAGE
SAINT LOUIS
BOSTON

April 15, 1997

Ms. Stephanie Doolan
Project Coordinator
U.S. Environmental Protection Agency, Region VII
RCRA Permits and Compliance Branch
726 Minnesota Avenue
Kansas City, Kansas 66101

REMEDIATION SYSTEM UPGRADE
FOR THE SECO PRODUCTS FACILITY
WASHINGTON, MISSOURI

Dear Ms. Doolan:

This report is submitted by Shannon & Wilson, Inc. on behalf of our client, Hussmann Corporation, for the above referenced site. This report, developed in response to the Modification of Corrective Action (Docket No. VII-89-H-0018), presents the activities associated with the abandonment of existing monitoring wells, installation of two new recovery wells along the south side of the property, and replacement of recovery well RW-1 at the Seco Products Facility in Washington, Missouri.

Please call if you have any questions or comments concerning the contents of this report.

Very truly yours,

SHANNON & WILSON, INC.

Lawrence C. Rosen

Lawrence C. Rosen, RG
Principal Geologist

Attachments: Remediation System Upgrade for the Seco Products Facility, Washington, Missouri
Important Information About Your Environmental Engineering Report

Submitted: 4 Copies

Copies: Mr. Dennis Dubitsky, Hussmann Corporation
Mr. Paul Wilson, Patton, Boggs, & Blow
Mr. Bruce Stuart, Missouri Department of Natural Resources
Mr. Rick Runyun, Seco Products

DJM:LCR/nlb

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EXECUTIVE SUMMARY

The purpose of this report is to present a summary of the Phase II activities performed at the SECO Products Facility in Washington, Missouri. Phase II work, begun in February 1996, included replacement of RW-1 and the abandonment of wells no longer required to be monitored. The replacement well for RW-1 installed in February 1996 did not meet production requirements, and it was replaced by a new recovery well in September 1996. Two new recovery wells along the southern side of the site were also installed as part of the Phase II work.

REMEDIATION SYSTEM UPGRADE FOR THE SECO PRODUCTS FACILITY WASHINGTON, MISSOURI

1.0 INTRODUCTION

This report was developed per the Modification of Corrective Action (Docket No. VII-89-H-0018) reporting schedule. This report presents the results of Phase II work performed at the Seco Products Facility in Washington, Missouri (Plate 1).

2.0 GROUNDWATER RECOVERY SYSTEM

2.1 Introduction

Five groundwater recovery wells, RW-1 to RW-5 were installed at the locations shown on Plate 2, and the groundwater recovery system began operations on January 29, 1990. The planned upgrade of this system was submitted to U.S. Environmental Protection Agency (EPA) in a work plan for Phase II work, and approved by EPA in November 1995. The plan included abandonment of six existing monitoring wells, replacement of RW-1, and installation of two new recovery wells along the southern perimeter of the site.

2.2 Monitoring Well Abandonment

Abandonment of six groundwater monitoring wells (MD-1, MD-2, SS-1, SS-2, SS-3, and MW-1) was approved by EPA. Variance #00401 was granted by the Missouri Department of Natural Resources (MDNR) Wellhead Protection Section for abandoning wells by pulling the riser and screen rather than drilling out the well. Abandoned wells are shown on Plate 2 in half-tone.

Before pulling well MD-1, the bottom of the well was knocked out, and the casing was filled with grout. Additional grout was added as needed during the pull. The well separated approximately four feet below ground surface (bgs) at the joint connecting the riser pipe and screen. The hole was then grouted to the surface. The same procedure was followed at each of the other wells approved for abandonment; however, at MW-1 and SS-1, the entire length of riser and screen were removed. Each location was observed for grout settlement and topped off as needed. Registration of well abandonment was sent to the MDNR Wellhead Protection Section.

In addition, the original RW-1 was abandoned by drilling out the existing well's screen and riser pipe. The well was drilled out using 10.25-inch inside-diameter (ID) hollow stem augers (HSA). The old six-inch ID well was completely removed from the hole. The first

replacement well was installed through the 10.25-inch HSA and construction details are discussed in Section 2.3.

2.3 Recovery Well Installation

Two new recovery wells were drilled and installed along the southern side of the site and are designated RW-6 and RW-7. A replacement recovery well was installed at RW-1 and maintains that designation. Well locations are shown on Plate 2.

The same procedure was followed in drilling and installing RW-6 and RW-7. A pilot hole was drilled using 3.25-inch ID HSA, and soil samples were obtained continuously with a two-foot-long split spoon sampler. Samples were collected for the purpose of logging the borings and identifying boring termination depth based upon geology and occurrence of groundwater. Boring logs are presented in Appendix A.

The RW-6 pilot hole was drilled on February 6, 1996. The stratigraphy consisted of medium stiff to stiff silty clay and clay in the upper 30 feet. Below 30 feet, soil consisted of clayey silt with varying amounts of fine-grained sand. Locally, thin beds of fine-grained sand occur, separated by thicker sequences of silty clay. Groundwater was measured at 31.8 feet bgs, after drilling. The boring was terminated 42 feet in stiff, silty clay.

The boring for recovery well RW-6 was drilled on February 7, 1996, at the location of the pilot hole, using 10.25-inch ID HSA. The well was constructed using six-inch ID PVC riser and screen. The well screen was 30-feet long consisting of 0.010-inch continuous slot (wire-wrapped) openings. Construction details are provided in Appendices B and C.

RW-7 pilot hole was drilled on February 7 and 8, 1996. The stratigraphy consisted of mainly medium stiff to stiff silty clay and clay in the upper 30 feet. Below 30 feet, soil consisted of clayey silt with varying amounts of fine-grained sand. Groundwater was observed during drilling at about 31 feet bgs. The boring was terminated 47 feet in stiff, silty clay.

The boring for recovery well RW-7 was drilled at the location of the pilot hole using 10.25-inch ID HSA. The well was constructed using six-inch ID PVC riser and screen. The well screen was 35-feet long consisting of 0.010-inch continuous slot (wire-wrapped) openings.

The boring for recovery well RW-1 was drilled using 10.25-inch ID HSA to remove the old well and install the replacement well. The well was constructed using six-inch ID PVC riser and screen. The well screen was 40-feet long, consisting of 0.010-inch continuous slot (wire-wrapped) openings. This well did not meet production requirements and was abandoned in accordance with a variance (#546) obtained from MDNR Wellhead Protection. The replacement well for this location was offset approximately eight feet to the north. The boring

was drilled using 6.25-inch ID HSA to a depth of 50.5 feet. The augers were removed from the borehole prior to installation of the well materials, with the borehole stabilized during well installation by water augmented with G-150. This approach was approved by EPA and MDNR. The replacement well was completed on September 12, 1996.

The three new wells have a 48-inch diameter carbon-steel well vaults with cover plate for well protection. The concrete vault for the original RW-1 was backfilled with soil.

2.5 Well Development

Well development was performed on each of the three recovery wells prior to installation of the pumps, discharge lines, and pump-control/power units. Development included surging each well for a minimum half hour, followed by pumping water and fine-grained material using an air-lift pump. Groundwater parameters of temperature, pH, and conductivity were monitored during development. Well development details are presented in Appendix E.

2.5 Expansion of the Groundwater Recovery System

The system recovery lines originally terminated at RW-5. The ground on the east side of the RW-5 control panel was hand excavated to determine the means for connecting RW-6 and RW-7 into the existing system. The recovery lines from RW-5 were found to have a "T" fitting with the north end leading back toward RW-4 and the air stripper, and the south end capped The expansion to RW-6 and 7 was connected to the south end of the "T". A ball valve was installed on the upflow side of RW-5 to aid in system installation and provide a means to isolate the new wells during construction so that the existing system could remain operating until the new wells could be brought online. The layout of the system expansion is shown in Plate 3.

A three-foot-deep trench, for placement of the discharge line and electrical cables, was dug using a ditch-witch. The trench trended southeasterly toward the southern fenceline, then turned east across the compacted-gravel driveway, running roughly parallel to the north side of the fence. Sand was placed at the base of the trench prior to placement of the two-inch ID PVC discharge lines. A minimum three inches of sand was placed between the PVC lines and the overlying electrical lines. The electrical lines were then overlain with a minimum six inches of sand before placing backfill and compacting.

The PVC pipe, in ten-foot lengths, was solvent welded with high-pressure PVC couplers. The sections of discharge line and the electrical lines crossing beneath the driveway were placed in a steel pipe to protect them from truck traffic. The steel pipe was covered with 3/4-inch minus rock to within 1.2 feet of the surface for additional strength. On the west side of the driveway, the trench (and discharge line and electrical cables) crosses a four-inch diameter

natural gas line, which is at a depth of four feet below ground surface. The lines were pressure tested prior to placing and compacting backfill in the trench. No leakage was observed.

The recovery lines were then installed in the well vaults at RW-6 and RW-7. Recovery lines were connected to the discharge lines from the well pumps. At each location, a sample port, flow meter, one-way valve, and ball valve were installed. The 1/2 horsepower motor-driven pumps are controlled by a timer and electrical load sensors. In the case of RW-1, the original pump controller with water-level floats were used. Typical well recovery system details are shown in Plate 4.

2.7 System Operation

The new recovery wells on the south side were brought online on February 19, 1996. Pumping rates of approximately 15 gallons per minute (gpm) each at RW-6 and RW-7 were observed. Groundwater recharge along the southern side is slow, such that the wells were rapidly evacuated and began cycling on a timer-set, one-hour interval. The timer will be adjusted for longer or shorter intervals depending on seasonal conditions. RW-1 pumped groundwater at rate of approximately 9 gpm and cycles upon evacuation. Cycling time of the pump vary as the groundwater level fluctuates seasonally.

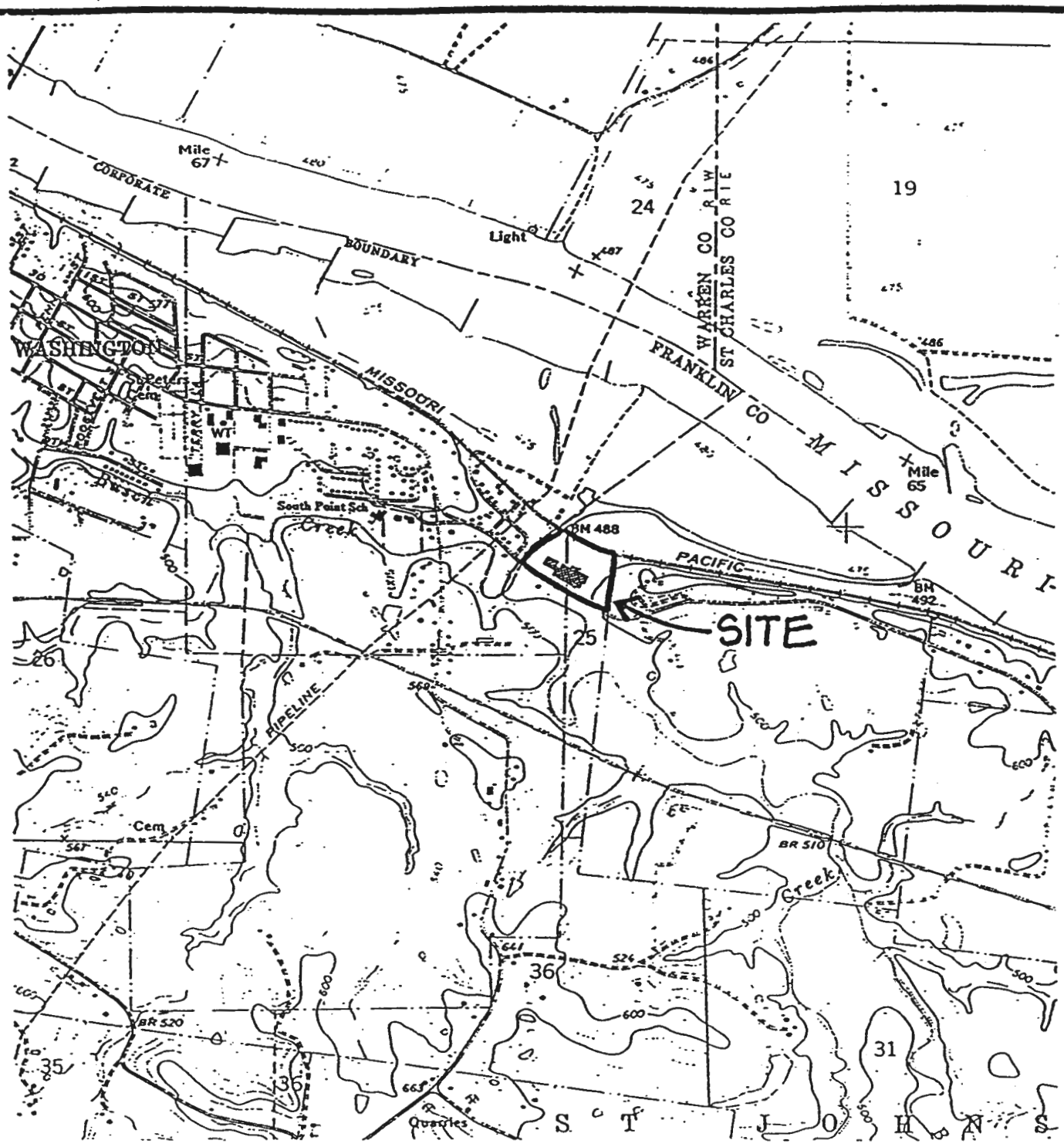
3.0 OTHER SITE ACTIVITIES

3.1 Waste Disposal

Analytical results of the soil cuttings (received in March 1996) were used to complete the permit application for waste disposal. The soil cuttings, contained in 19 55-gallon drums, were transported from the site on May 30, 1996. Manifests are presented in Appendix F.

* * *

PLATES



NOTE: This plate was prepared from a photo copy of portions of an USGS 7.5 min quadrangle titled, " Washington East, MO ", and includes additional data obtained during the preparation of this report. Other data are located approximately on this plate based on field measurements from site features.

NORTH

0 1000 2000 4000

Scale, In feet

LOCATION PLAN
SECO PRODUCTS FACILITY
HUSSMANN CORPORATION
WASHINGTON, MISSOURI

Z-370-1

SHANNON & WILSON, INC.
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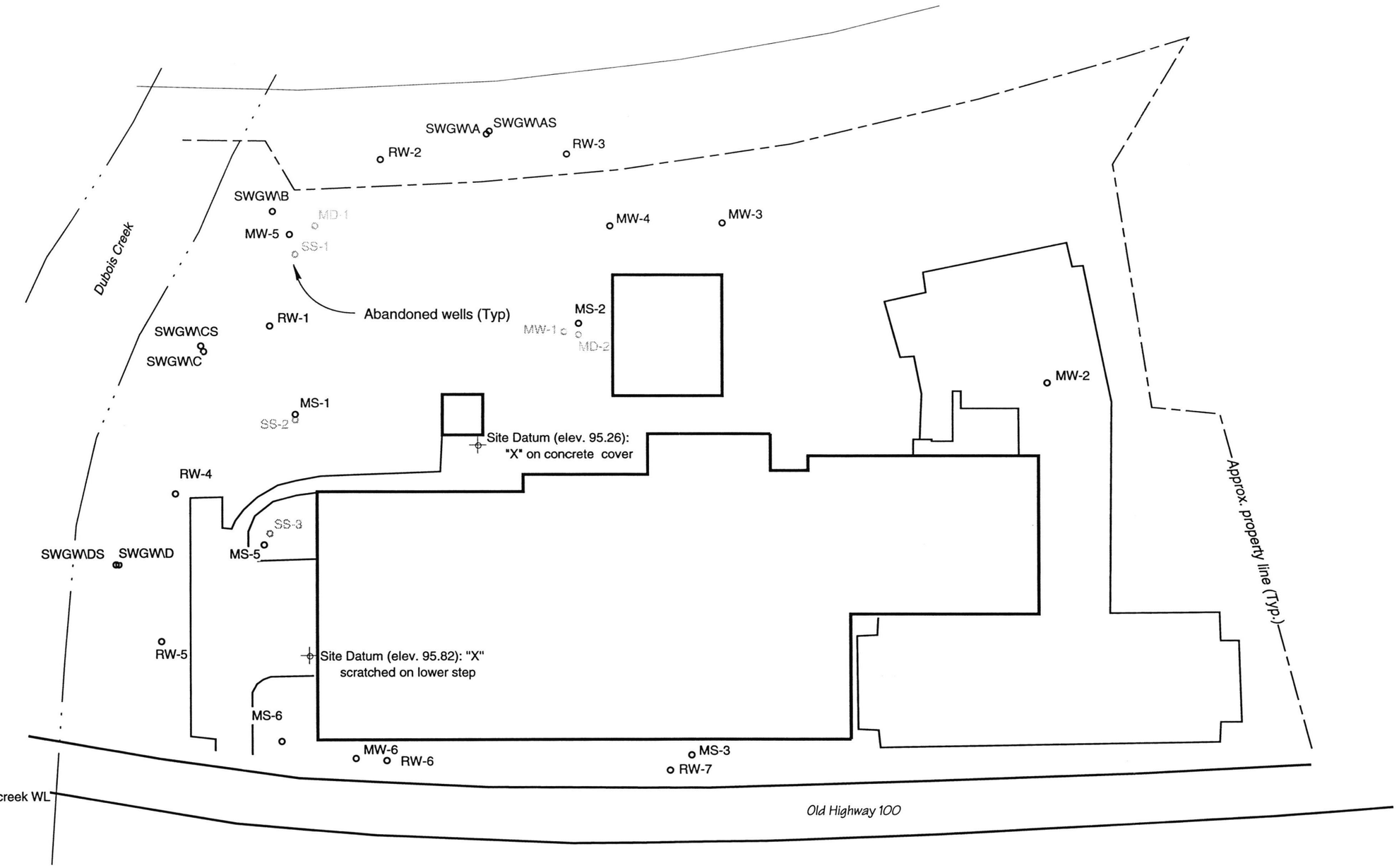
PLATE 1



Z-370-02

SITE PLAN
SECO PRODUCTS FACILITY
HUSSMANN CORPORATION
WASHINGTON, MO

SHANNON & WILSON, INC.
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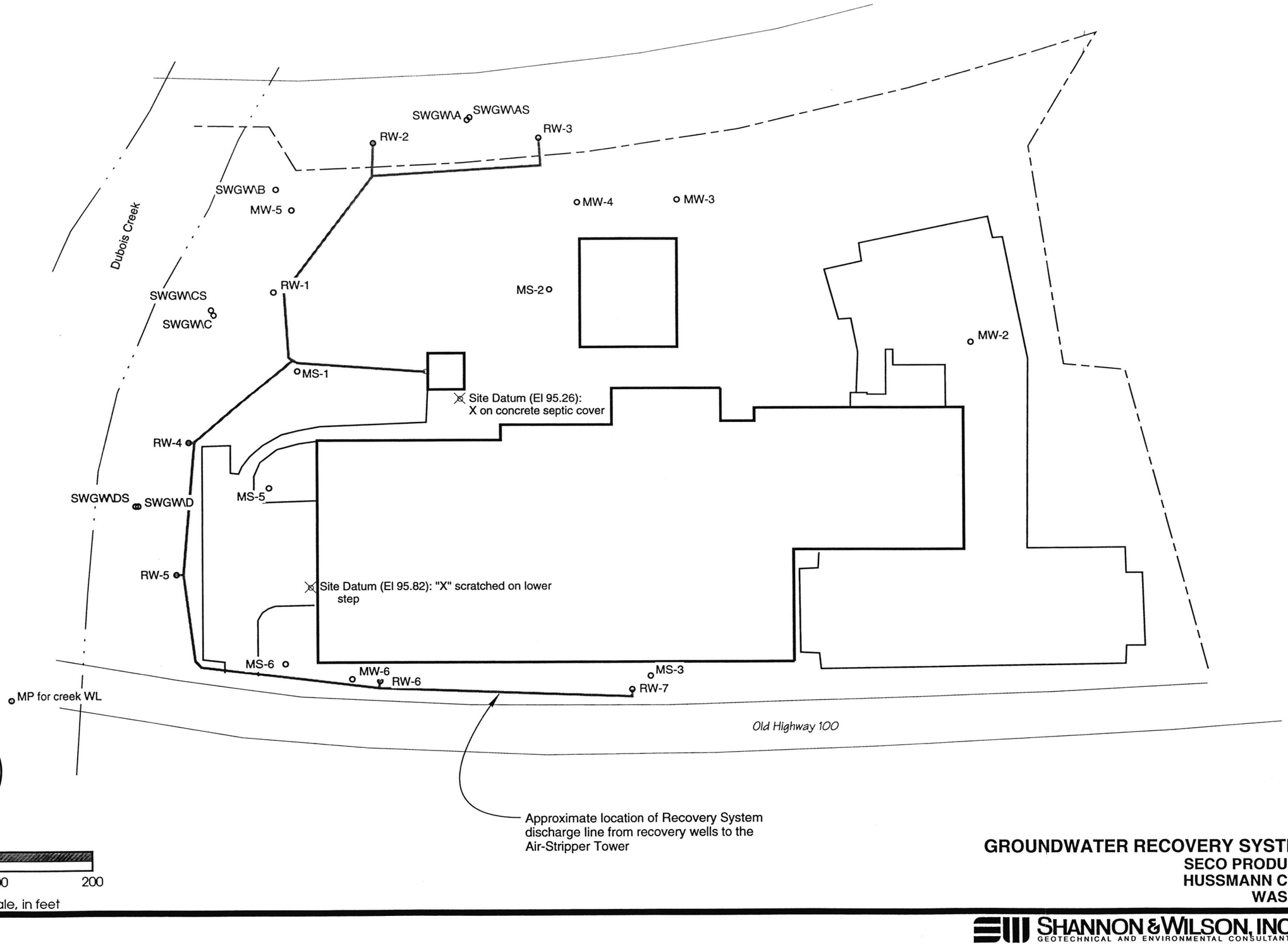
PLATE 2



Z-370-02

GROUNDWATER RECOVERY SYSTEM LAYOUT

SECO PRODUCTS FACILITY
HUSSMANN CORPORATION
WASHINGTON, MO

SHANNON & WILSON, INC.
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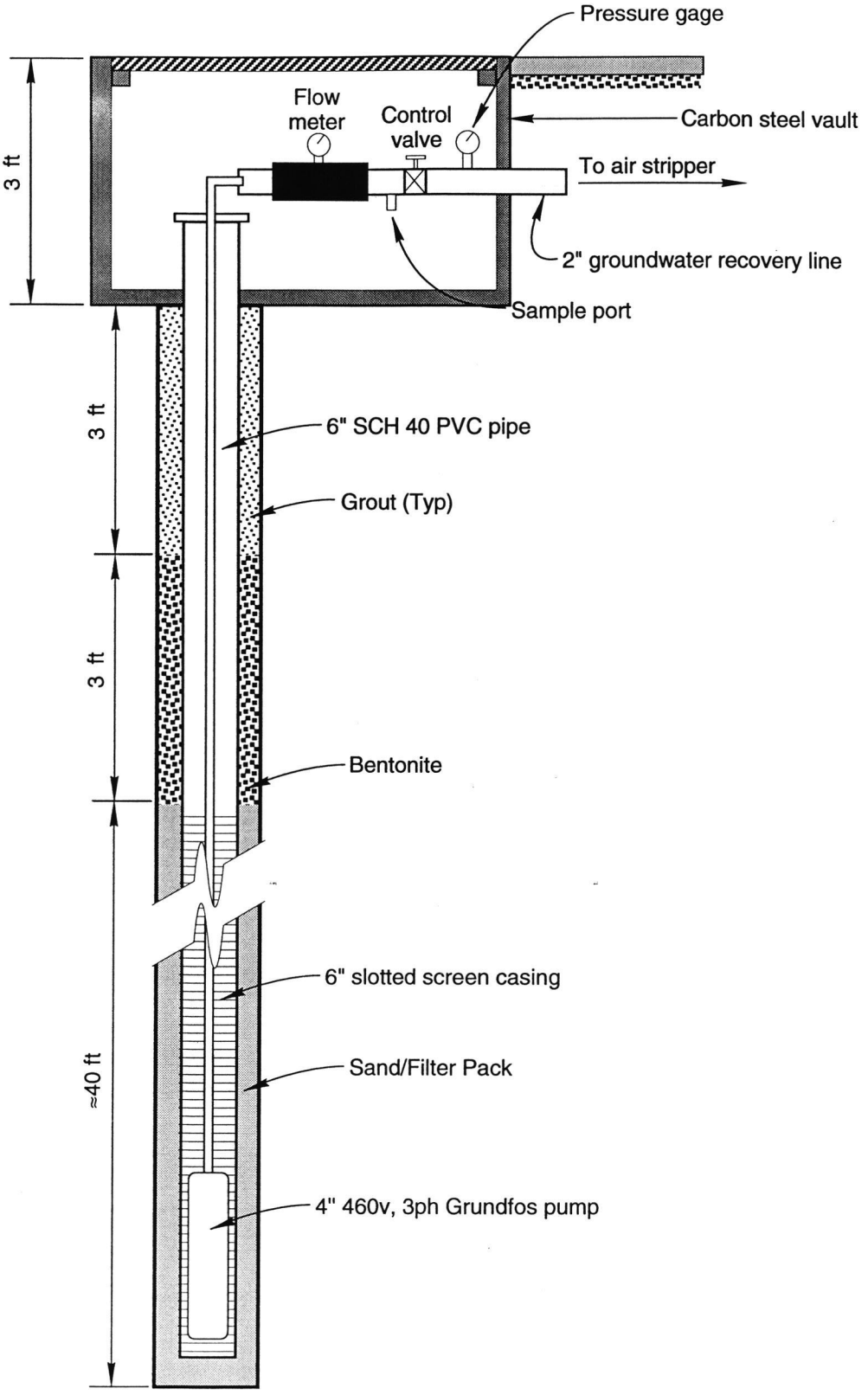
PLATE 3



Not to Scale

TYPICAL GROUNDWATER RECOVERY WELL DETAIL
SECO PRODUCTS FACILITY
WASHINGTON, MISSOURI

Z-370-02

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PLATE 4

APPENDIX A

Boring Logs

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LOG OF BORING
BORING NO. RW-6 (Pilot)

PROJECT: SECO FACILITY - HUSSMANN		JOB NO.: Z-370-01	SHEET: 1 OF 6
CLIENT: HUSSMANN		DRILLING AGENCY: United Geoscience	
SIZE AND TYPE OF BIT: 3 1/4" id. Hollowstem		LOCATION (COORDINATES OR STATION):	
DIRECTION AND INCLINATION OF HOLE: vertical	SOIL SAMPLING FOOTAGE: 40'	CORING FOOTAGE: —	TOTAL DEPTH: 42'
ELEVATION:	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION: 20	TUBES:
DEPTH TO WATER: 31.8'	NO. OF CORE BOXES: —	DATE STARTED: 2/6/96	DATE COMPLETED: 2/6/96
		INSPECTOR(S): RWS / LCR	

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
			top soil				no sample collected 1st 2'
1			moist, brown, clay, ~~sand~~ sand & gravel (Fill)				
			? ?				
2			dk. brown, v. stiff, blocky clay	SS-1	1.66/2		
3.0					2.5 ppm		
4.0				SS-2	1.5/20		
					6 ppm		
5.0							
					4 ppm		
6.0				SS-3	20/20		
					2 ppm		
7.0			mn nodules, trace limestone fragments				
			stiff, dark brown & gray mottled clay w/ mn nodules & limestone fragments		5 ppm		
8.0							

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LOG OF BORING
BORING NO. RW-6 (PILOT)

PROJECT: SECO FACILITY		JOB NO.: Z-370-01	SHEET: 2 OF 6
CLIENT: HUSSMANN	DRILLING AGENCY: United Geoscience		
SIZE AND TYPE OF BIT:	LOCATION (COORDINATES OR STATION):		
DIRECTION AND INCLINATION OF HOLE:	SOIL SAMPLING FOOTAGE:	CORING FOOTAGE:	TOTAL DEPTH:
ELEVATION:	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION: TUBES:	
DEPTH TO WATER:	NO. OF CORE BOXES:	DATE STARTED: 2/6/96 DATE COMPLETED: 2/6/96	INSPECTOR(S): RWS / LCR

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
9.0			stiff, blocky brown/gray mottled clay / trace limestone fragments	SS-4	1.75/2.0 7 ppm		
					11 ppm		
10.0				SS-5	1.75/2.0 [illegible] ppm		
11.0					13 ppm		
12.0				SS-6	2.0/2.0 11.6 ppm		
13.0							
14.0				SS-7	2.0/2.0 14 ppm		
15.0					11 ppm		
16.0							

SHANNON & WILSON, INC.
GEOTECHNICAL CONSULTANTS

LOG OF BORING
BORING NO. RW-6 (PILOT)

PROJECT		JOB NO.	SHEET	OF
SEPO FACILITY		E-370-01	3	6
CLIENT		DRILLING AGENCY		
HUSMANN		United Geoscience		
SIZE AND TYPE OF BIT		LOCATION (COORDINATES OR STATION)		
DIRECTION AND INCLINATION OF HOLE		SOIL SAMPLING FOOTAGE	CORING FOOTAGE	TOTAL DEPTH
ELEVATION	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION	TUBES	
DEPTH TO WATER	NO. OF CORE BOXES	DATE STARTED: 2/6/96	DATE COMPLETED: 2/6/96	INSPECTOR(S)

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
			dk. brown/gray mottled, stiff, blocky CLAY w/ mn nodules, trace limestone fragments	SS-8	20/20		13 ppm
17.0							11 ppm
18.0			med. stiff	SS-9			3 ppm
19.0							4 ppm
20.0			~~brown/gray~~ silty clay, moist, med. stiff to soft, w/ Fe/mn staining & trace limestone fragments	SS-10	20/20		4
21.0							7 ppm
22.0			6" interbedded stiff, gray clay	SS-11	20/20		1.0 ppm
23.0							2 ppm
24.0							

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LOG OF BORING
BORING NO. RW-6 (PILOT)

PROJECT	JOB NO.	SHEET	OF
SECO FACILITY	Z-370-01	4	6

CLIENT	DRILLING AGENCY
HUSTMANN	United Geoscience

SIZE AND TYPE OF BIT	LOCATION (COORDINATES OR STATION)

DIRECTION AND INCLINATION OF HOLE	SOIL SAMPLING FOOTAGE	CORING FOOTAGE	TOTAL DEPTH

ELEVATION	MFR. DESIGNATION OF DRILL	NUMBER OF SOIL SAMPLES PENETRATION	TUBES
	CME 750		

DEPTH TO WATER	NO. OF CORE BOXES	DATE STARTED	DATE COMPLETED	INSPECTOR(S)
		2/6/96	2/6/96	RWS/LCR

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
				SS-12	20/20 5ppm		
25.0			stiff, brown & gray mottled clay \w Fe stains, trace limeston fragments		2ppm		
26.0				SS-14	20/20 3ppm		
27.0			med. stiff, moist, gray clay SILT \w Fe stains & limestone fragments		4ppm		
28.0			dk. gray, moist silt \w trace wood fragments	SS-15	20/20 8ppm		
29.0					1ppm		
30.0				SS-16	20/20 0ppm		
31.0							
		∇ 0	clayey silt, ±1" thick silt on top		0ppm		
32.0							

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LOG OF BORING
BORING NO. RW-6 (PILOT)

PROJECT: SECO FACILITY		JOB NO.: Z-370-01	SHEET: 5 OF 6
CLIENT: HUSSMANN	DRILLING AGENCY: United Geoscience		
SIZE AND TYPE OF BIT	LOCATION (COORDINATES OR STATION)		
DIRECTION AND INCLINATION OF HOLE	SOIL SAMPLING FOOTAGE	CORING FOOTAGE	TOTAL DEPTH
ELEVATION	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION / TUBES	
DEPTH TO WATER	NO. OF CORE BOXES	DATE STARTED: 2/6/96 DATE COMPLETED: 2/6/96	INSPECTOR(S): RWS/LCR

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
			wet, soft, dk gray SILT w/ trace sand, fwood & shell fragments	SS-17	2.0/2.0		2 ppm
33.0							1 ppm
34.0				SS-18	2.0/2.0		1 ppm
			increasing fine sand w/ depth				
35.0							1 ppm
36.0			dk gray, loose, med SAND with silt & fine sand & shell frag.	SS-19	2.0/2.0		1 ppm
37.0			med. stiff, dk. greenish gray silty CLAY				0 ppm
38.0				SS-20	1.25/2		
39.0							0 ppm
40.0							

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LOG OF BORING
BORING NO. RW-6 (PILOT)

PROJECT: SECO FACILITY		JOB NO.: Z-370-01	SHEET: 6 OF 6
CLIENT: HUSSMANN		DRILLING AGENCY: United Geosciences	
SIZE AND TYPE OF BIT:		LOCATION (COORDINATES OR STATION):	
DIRECTION AND INCLINATION OF HOLE:		SOIL SAMPLING FOOTAGE:	CORING FOOTAGE: / TOTAL DEPTH:
ELEVATION:	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES: PENETRATION / TUBES	
DEPTH TO WATER:	NO. OF CORE BOXES:	DATE STARTED: 2/6/96	DATE COMPLETED: 2/6/96 / INSPECTOR(S): RWS / LCR

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
41.0			wet, interbedded ~~clay~~, sand, ~~shell~~ + limestone/clay marls	SS-21			
				0 ppm			
			dk. greenish gray silty clay, stiff				
				0 ppm			
42.0			BOH @ 16:20				
43.0							
44.0							
45.0							
46.0							
47.0							
48.0							

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LOG OF BORING
BORING NO. RW-7C (pilot hole)

PROJECT: SECo Facility - Hussmann		JOB NO.: 2-370-01	SHEET: 1 OF 6
CLIENT: Hussmann	DRILLING AGENCY: United Geosciences		
SIZE AND TYPE OF BIT: 3¼" hollowstem	LOCATION (COORDINATES OR STATION):		
DIRECTION AND INCLINATION OF HOLE: vertical	SOIL SAMPLING FOOTAGE: 47'	CORING FOOTAGE:	TOTAL DEPTH: 47'
ELEVATION:	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION: 23	TUBES:
DEPTH TO WATER: ~31' @ 07:45 on 2/8/96	NO. OF CORE BOXES:	DATE STARTED: 2/7/96 DATE COMPLETED: 2/8/96	INSPECTOR(S): RWS/LCR

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
0			Start @ 14:47				
12							
32			brown/gray mottled, stiff clay w Fe/mn stains	SS-1	1.5/2.0		
33					0 ppm		
34			trace limestone fragments	SS-2	2.0/2.0		
					0 ppm		
35					0 ppm		
36				SS-3	2.0/2.0		
					0 ppm		
37					0 ppm		
38							

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LOG OF BORING
BORING NO. RW-7(pilothole)

PROJECT: Seco Facility		JOB NO.: 7-370-01	SHEET: 2 OF 6
CLIENT: Hussmann	DRILLING AGENCY: United Geosciences		
SIZE AND TYPE OF BIT: 3 1/4" hollowstem	LOCATION (COORDINATES OR STATION):		
DIRECTION AND INCLINATION OF HOLE: VERTICAL	SOIL SAMPLING FOOTAGE: 47'	CORING FOOTAGE:	TOTAL DEPTH: 47'
ELEVATION:	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION: 23	TUBES:
DEPTH TO WATER:	NO. OF CORE BOXES:	DATE STARTED: 2/7/96	DATE COMPLETED: 2/8/96
		INSPECTOR(S): RWS/LCR	

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
8				SS-4	20/20		
					3ppm		
9							
					3ppm		
10				SS-5	20/20		
					0ppm		
11							
			brown to gray mottled, soft, moist, silty CLAY w Fe/Mn stains & trace fine sand		0ppm		
12			stiff, blocky, brown to gray mottled clayey w Fe, Mn stains & trace limestone fragments	SS-6	20/20		
					0ppm		
13							
			soft, brown to gray mottled moist, clayey SILT to SILT w Fe/Mn stains		0ppm		
14				SS-7	20/20		
			interbedded stiff, clayey layers 2-4" thick		.5ppm		
15							
					0ppm		
16							

SHANNON & WILSON, INC.
GEOTECHNICAL CONSULTANTS

LOG OF BORING
BORING NO. RW-7 (pilot hole)

PROJECT: Seco Facility		JOB NO.: Z-370-01	SHEET: 3 OF 6
CLIENT: Hussmann	DRILLING AGENCY: United Geosciences		
SIZE AND TYPE OF BIT: 3¼" HSA	LOCATION (COORDINATES OR STATION):		
DIRECTION AND INCLINATION OF HOLE: VERTICAL	SOIL SAMPLING FOOTAGE: 17'	CORING FOOTAGE:	TOTAL DEPTH: 17'
ELEVATION:	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION: 23	TUBES:
DEPTH TO WATER:	NO. OF CORE BOXES:	DATE STARTED: 2/7/96 DATE COMPLETED: 2/8/96	INSPECTOR(S): RWS/LCR

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
16			~~med. stiff~~, brown ± gray mottled silty clay w Fe/Mn stains	SS-10	20/20		
					7 ppm		
17			soft, moist, brown ± gray mottled clayey silt to silt w Fe/Mn stains, ± trace fine sand		8 ppm		
18				SS-9	20/20		
					5 ppm		
19					5 ppm		
20				SS-16	20/20		
					5 ppm		
21			loose, wet, brown ± gray mottled SILT w Fe/Mn stains ± trace fine sand		5 ppm		
22				SS-11	20/20		
					6 ppm		
23			~~Stiff~~, brown ± gray mottled, silty clay w Fe/Mn stains ± trace limestone fragments		0 ppm		
24			soft, moist, gray silty clay				

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LOG OF BORING
BORING NO. RW-7 (pilot hole)

PROJECT: Seco Facility		JOB NO.: 2-370-01	SHEET: 4 OF 6
CLIENT: Hussmann		DRILLING AGENCY: United Geosciences	
SIZE AND TYPE OF BIT: 3 1/4" hollow stem		LOCATION (COORDINATES OR STATION):	
DIRECTION AND INCLINATION OF HOLE: VERTICAL		SOIL SAMPLING FOOTAGE: 47'	CORING FOOTAGE:	TOTAL DEPTH: 47'
ELEVATION:	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION: 23 TUBES	
DEPTH TO WATER:	NO. OF CORE BOXES:	DATE STARTED: 2/6/96	DATE COMPLETED: 2/8/96	INSPECTOR(S): RWS/LCR

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
24				SS-12	20/20		
			med. stiff, brown to gray mottled silty Clay w/ Fe/Mn stains & trace lime stone frags		1 ppm		
25							
					2 ppm		
26							
				SS-13	20/20		
			dk gray, med stiff to stiff, silty Clay w/ Fe stains		0 ppm		
27							
					0 ppm		
28				SS-14	20/20		
					4 ppm		
29							
			med stiff to stiff, greenish-gray silty clay		3 ppm		
30				SS-15	20/20		
					2 ppm		
31							
					2 ppm		
32							

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LOG OF BORING
BORING NO. RW-7C pilot hole

PROJECT: Seco Products		JOB NO.: 2-370-01	SHEET: 5 OF 6
CLIENT: Hussmann		DRILLING AGENCY: United Geosciences	
SIZE AND TYPE OF BIT: 3 1/4" hollow stem		LOCATION (COORDINATES OR STATION):	
DIRECTION AND INCLINATION OF HOLE: VERTICAL	SOIL SAMPLING FOOTAGE: 47'	CORING FOOTAGE:	TOTAL DEPTH: 47'
ELEVATION:	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION: 23	TUBES:
DEPTH TO WATER: ~31' @ 0745 2/8/96	NO. OF CORE BOXES:	DATE STARTED: 2/7/96 DATE COMPLETED: 2/8/96	INSPECTOR(S): RWS/LCR

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
32			med stiff to stiff, bluish green silty CLAY w/ trace rootlets + intermittent ~~fine~~ sand	SS-16	24/24"		
					4 ppm		
33							
					5 ppm		
34			soft - med stiff green-gray silty CLAY to clayey SILT w/ tr. sand; moist	SS-17	<1 ppm		
					24"/24"		
35							
			MORE CLAYEY				
36							
			Med stiff - stiff gray silty CLAY	SS-18	100%		
			Med stiff clay SILT; gray		0 ppm		
37			Med stiff - stiff gray silty CLAY moist				
			Soft clayey SILT; wet, tr SAND				
38			gray	SS-19	100%		
			Soft-med stiff gray clay SILT; moist-wet; tr vf sand; tr rootlets		0 ppm		
39							
40							

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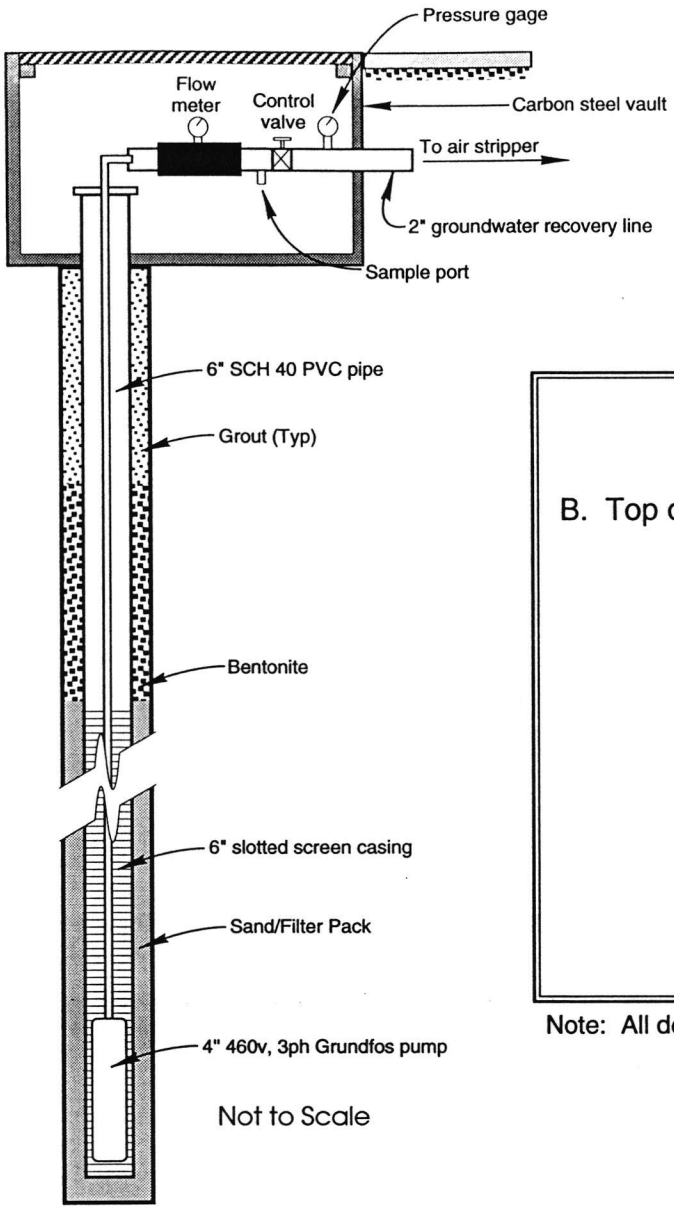
LOG OF BORING
BORING NO. RW-7 (pilot hole)

PROJECT: Seco Facility		JOB NO.: 3-370-01	SHEET: 6 OF 6
CLIENT: Hussmann		DRILLING AGENCY: United Geosciences	
SIZE AND TYPE OF BIT: 3 1/4" hollowstem		LOCATION (COORDINATES OR STATION):	
DIRECTION AND INCLINATION OF HOLE: VERTICAL	SOIL SAMPLING FOOTAGE: 47'	CORING FOOTAGE:	TOTAL DEPTH: 47' (sampling)
ELEVATION:	MFR. DESIGNATION OF DRILL: CME 750	NUMBER OF SOIL SAMPLES PENETRATION: 23	TUBES: 0
DEPTH TO WATER:	NO. OF CORE BOXES:	DATE STARTED: 2/7/96	DATE COMPLETED: 2/8/96
		INSPECTOR(S): RWS / LCR	

DEPTH IN FEET	LITHOLOGY	GRAPHIC LOG	CLASSIFICATION OF MATERIALS (DESCRIPTION)	SAMPLE OR RUN NUMBER	% REC / % REQD	BOX NUMBER	REMARKS
40			V soft - soft silty CLAY to clayey silt; gray, moist - wet; tr vfg sand	SS-20	22"/24" 0 ppm		
41							
42			Very soft - soft silty CLAY, moist tr root bits	SS-21	100%		
43			Soft gray clayey silt; wet; some fine bedding; tr vfg SAND		3 ppm		
44			Med stiff - stiff gray silty CLAY; sl moist	SS-22	100%		
45			Stiff - v. stiff; sl moist to dry tr vfg sand; tr root bits		0 ppm		
46				SS-23	11"/12" 0 ppm		
47			EOH @ 47' tr root bits				
48							

APPENDIX B

Groundwater Recovery Well Construction Diagrams



A. Top of 6" riser- 1.5'

B. Top of cement/bentonite grout- n/a

C. Top of bentonite seal- 3.0'

D. Top of sandpack- 6.0'

E. Top of screen- 9.0'

F. Bottom of screen- 48.5'

G. Bottom of boring- 50.5'

Note: All depths measured from ground surface.

Job No.: Z-370-02 **Well No.:** RW-1 **Date Installed:** 9/10/96

Installation Observed By: LC Rosen **Subcontractor:** United Geosciences

Well Components:

Screen 6" ID PVC, 0.010 inch wire-wrapped, flush threaded

Riser Pipe 6" ID PVC, flush threaded

Backfill Cement bentonite

Bentonite Seal Chips

Sandpack Morey Filtration Media GA-9

Protective Casing Carbon Steel Vault, 48-inch dia. with cover

Z-370-02

GROUNDWATER RECOVERY WELL CONSTRUCTION DIAGRAM

SHANNON & WILSON, INC.
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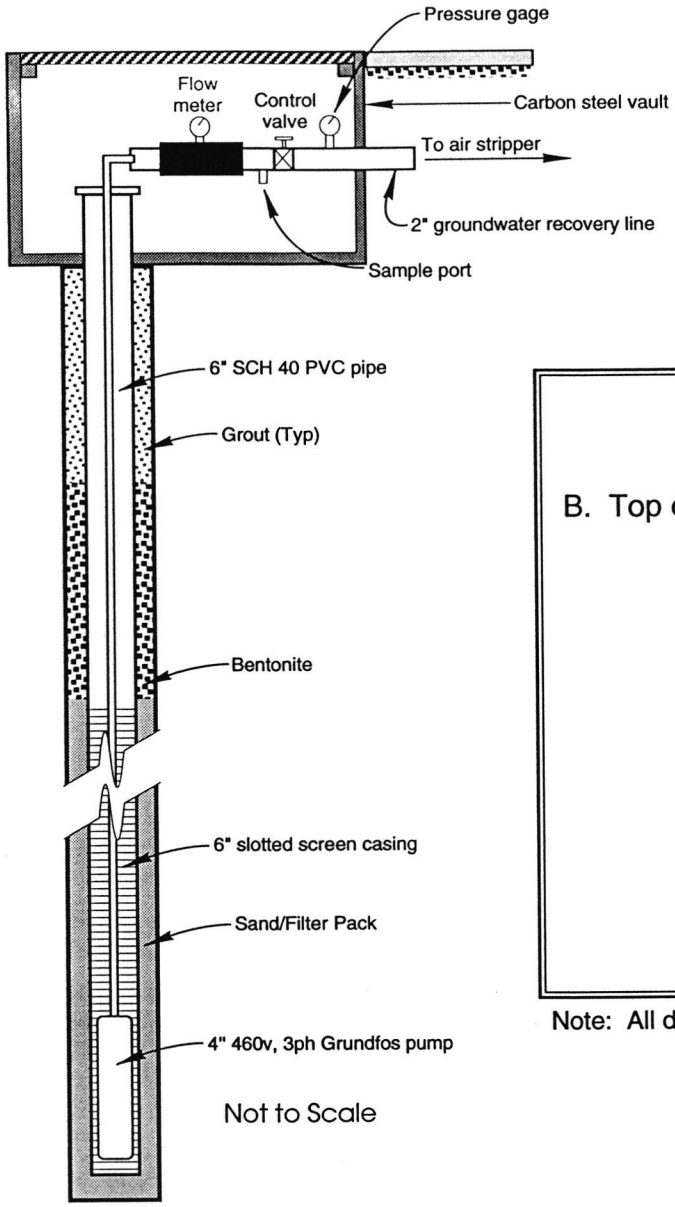


A. Top of 6" riser- 1.6'

B. Top of cement/bentonite grout- n/a

C. Top of bentonite seal- 3.0'

D. Top of sandpack- 8.0'

E. Top of screen- 11.5'

F. Bottom of screen- 41.5'

G. Bottom of boring- 42.0'

Note: All depths measured from ground surface.

Job No.: Z-370-02 **Well No.:** RW-6 **Date Installed:** 2/7/96

Installation Observed By: LC Rosen **Subcontractor:** United Geosciences

Well Components:

Screen 6" ID PVC, 0.010 inch wire-wrapped, flush threaded

Riser Pipe 6" ID PVC, flush threaded

Backfill Cement bentonite

Bentonite Seal Chips

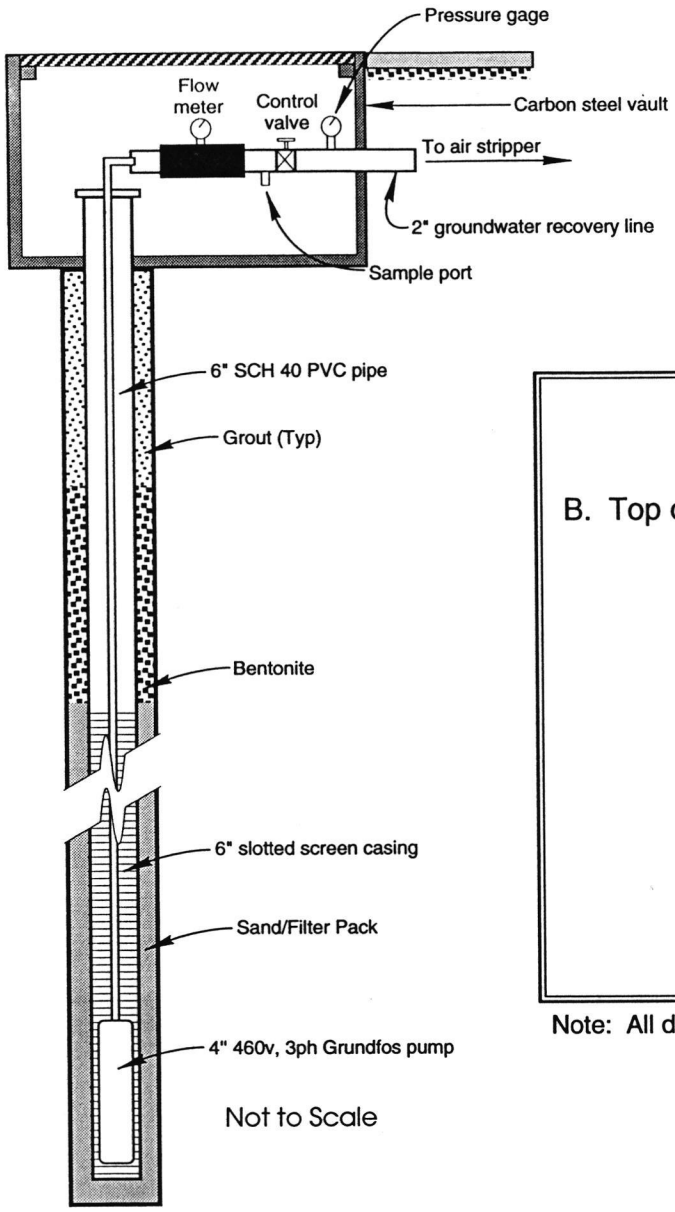
Sandpack Morey Filtration Media GA-9

Protective Casing Carbon Steel Vault, 48-inch dia. with cover

Z-370-02

GROUNDWATER RECOVERY WELL CONSTRUCTION DIAGRAM

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS



A. Top of 6" riser-	2.0'
B. Top of cement/bentonite grout-	3.0'
C. Top of bentonite seal-	4.0'
D. Top of sandpack-	7.0'
E. Top of screen-	11.5'
F. Bottom of screen-	46.5'
G. Bottom of boring-	47.0'

Note: All depths measured from ground surface.

Job No.: Z-370-02 **Well No.:** RW-7 **Date Installed:** 2/8/96

Installation Observed By: LC Rosen **Subcontractor:** United Geosciences

Well Components:

Screen 6" ID PVC, 0.010 inch wire-wrapped, flush threaded

Riser Pipe 6" ID PVC, flush threaded

Backfill Cement bentonite

Bentonite Seal Chips

Sandpack Morey Filtration Media GA-9

Protective Casing Carbon Steel Vault, 48-inch dia. with cover

Z-370-02

GROUNDWATER RECOVERY WELL CONSTRUCTION DIAGRAM

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

APPENDIX C

Groundwater Recovery Well Documentation

MONITORING WELL DOCUMENTATION FORM

Well No. RW-1 Job Name SECO

Job Number Z-370-02 Date Completed 9/12/96 Supervised By LCR

A. Surveyed Locations and Elevations

Locations (±0.5 ft.)

Specify corner of site See site plan

Distance and direction along boundary

Distance and direction from boundary to well

Elevation (±0.01 ft. ~~MSL~~)

Ground surface ~83

Top of protective casing ~83.3

Top of well casing ~82.0

Benchmark elevation 95.82

Benchmark description Steps, Receiving

B. Soil Boring Information

Name and address of construction company

United Geoscience, Inc.

Villa Ridge, MO

Name of Driller Rob Vogt

Drilling method 6.25" Hollow Stem Augers

Drilling fluid NA

Bore hole diameter ~11 inches

Soil sampling method NA

Depth of boring 50.5 feet

C. Monitoring Well Installation

Casing material PVC

Length of casing 7.5

Inside casing diameter 6 inches nominal

Casing joint type Flush threaded

Casing/screen joint type Flush threaded

Screen material PVC wire-wrapped

Screen opening size 0.010 inch

Screen length 40 ft

Depth of well 49 feet below ground surface

Well Installation, continued

Filter pack:

Material Sand (Morie Co. Filtration Media)

Grain size GA-9 (10-20)

Volume 33 50 lb bags (~17 cu ft)

Seal (minimum 3 ft. above filter pack):

Material Bentonite chips

Placement method gravity

Volume ~2.5 cu ft

Backfill (if different from seal):

Material NA

Placement method

Volume

Surface seal design:

Material of protective casing Carbon Steel

Material of grout between protective casing and well casing NA

Protective cap Vault Cover

Material Carbon Steel

Vented? Y / **N** Locking> Y / **N**

Well cap Yes

Material Steel w/ rubber gasket

Vented? **Y** / N Locking> Y / **N**

D. Ground Water Measurement

Water level (±0.01 ft. below top of inner well casing) ~19 feet after development

Stabilization time NA

Well development method Air lift with surge block, followed by downhole pump

Upgradient or downgradient well

NA

MONITORING WELL DOCUMENTATION FORM

Well No. RW-6 Job Name SECO

Job Number Z-370-02 Date Completed 2/8/96 Supervised By LCR

A. Surveyed Locations and Elevations

Locations (±0.5 ft.)

Specify corner of site See site plan

Distance and direction along boundary

Distance and direction from boundary to well

Elevation (±0.01 ft. ~~MSL~~)

Ground surface 97.87

Top of protective casing ~97.95

Top of well casing 96.22

Benchmark elevation 95.82

Benchmark description Steps, Receiving

B. Soil Boring Information

Name and address of construction company

United Geoscience, Inc.

Villa Ridge, MO

Name of Driller Rob Vogt

Drilling method 10.25" Hollow Stem Augers

Drilling fluid NA

Bore hole diameter ~14.5 inches

Soil sampling method Continuous split spoon

Depth of boring 42 feet

C. Monitoring Well Installation

Casing material PVC

Length of casing 10.35

Inside casing diameter 6 inches nominal

Casing joint type Flush threaded

Casing/screen joint type Flush threaded

Screen material PVC wire-wrapped

Screen opening size 0.010 inch

Screen length 30 ft

Depth of well 42 feet below ground surface

Well Installation, continued

Filter pack:

Material Sand (Morie Co. Filtration Media)

Grain size GA-9

Volume 60 50 lb bags (~30 cu ft)

Seal (minimum 3 ft. above filter pack):

Material Bentonite chips

Placement method gravity

Volume ~2.5 cu ft

Backfill (if different from seal):

Material NA

Placement method

Volume ~

Surface seal design:

Material of protective casing Carbon Steel

Material of grout between protective casing and well casing NA

Protective cap Vault Cover

Material Steel

Vented? Y / **N** Locking> Y / **N**

Well cap Yes

Material Steel w/ rubber gasket

Vented? **Y** / N Locking> Y / **N**

D. Ground Water Measurement

Water level (±0.01 ft. below top of inner well casing) 26.00 after development

Stabilization time NA

Well development method Air lift with surge block, followed by downhole pump

Upgradient or downgradient well

NA

MONITORING WELL DOCUMENTATION FORM

Well No. RW-7 Job Name SECO

Job Number Z-370-02 Date Completed 2/8/97 Supervised By LCR

A. Surveyed Locations and Elevations

Locations (±0.5 ft.)

Specify corner of site See site plan

Distance and direction along boundary

Distance and direction from boundary to well

Elevation (±0.01 ft. ~~MSL~~)

Ground surface 98.05

Top of protective casing ~98.15

Top of well casing 96.20

Benchmark elevation 95.82

Benchmark description Steps, Receiving

B. Soil Boring Information

Name and address of construction company

United Geoscience, Inc.

Villa Ridge, MO

Name of Driller Rob Vogt

Drilling method 10.25" Hollow Stem Augers

Drilling fluid NA

Bore hole diameter ~14.5 inches

Soil sampling method Continuous split spoon

Depth of boring 47 feet

C. Monitoring Well Installation

Casing material PVC

Length of casing 10.35

Inside casing diameter 6 inches nominal

Casing joint type Flush threaded

Casing/screen joint type Flush threaded

Screen material PVC wire-wrapped

Screen opening size 0.010 inch

Screen length 35 ft

Depth of well 47 feet below ground surface

Well Installation, continued

Filter pack:

Material Sand (Morie Co. Filtration Media)

Grain size GA-9

Volume 58 50 lb bags (~29 cu ft)

Seal (minimum 3 ft. above filter pack):

Material Bentonite chips

Placement method gravity

Volume ~2.5 cu ft

Backfill (if different from seal):

Material Cement - bentonite grout

Placement method gravity

Volume ~2.5 cu ft

Surface seal design:

Material of protective casing Carbon Steel

Material of grout between protective casing and well casing NA

Protective cap Vault Cover

Material Carbon Steel

Vented? Y / **N** Locking> Y / **N**

Well cap Yes

Material Steel w/ rubber gasket

Vented? **Y** / N Locking> Y / **N**

D. Ground Water Measurement

Water level (±0.01 ft. below top of inner well casing) 28.50 after development

Stabilization time NA

Well development method Air lift with surge block, followed by downhole pump

Upgradient or downgradient well

NA

APPENDIX D

Well Development Forms

MONITORING WELL DEVELOPMENT DATA

Well No. RW-1 Job Name Hussmann (Seco Products Facility)

Job Number Z-370-01 Date Developed 9/10-12/96 Developed By Un. Geoscience

1. Date of Installation 9/10/96
2. Static Water Level: Before Development ~19 Ft.
   After Development ~18 Ft.
3. Quantity of Water Loss During Drilling, If Used NA Gal.
4. Quantity of Standing Water in Well Before Development ~42 Gal.

5.	Start	During				End
Volume (Gal.)	0					90
Specific Conductance (µmhos/c)						
Temperature (C)						
pH (s.u.)						

6. Depth from Top of Well Casing to Bottom of Well NA Ft.
7. Screen Length 40 Ft.
8. Depth to Top of Sediment: Before Development NA Ft.
   After Development NA Ft.
9. Physical Character of Water Slightly turbid, trace fine sand
10. Type and Size of Well Development Equipment Used Surge block, air lift, downhole grundfos pump
11. Description of Surge Technique, if Used Surge block; used drill rig to aid in surging
12. Height of Well Casing Above Ground Surface ~ -1.5 Ft.
13. Quantity of Water Removed 90 Gal.
14. 1-Pint Water Sample Collected NA (time)

*Development Conditions:
(1) Well Water is Reasonably Clear
(2) Sediment Thickness ≤5% of Screen Length

15. QA/QC: Development Performed by LCR

Site Manager LCR

MONITORING WELL DEVELOPMENT DATA

Well No. RW-6 Job Name Hussmann (Seco Products Facility)

Job Number Z-370-01 Date Developed 2/15/96 Developed By Un. Geoscience

1. Date of Installation 2/7/96
2. Static Water Level: Before Development 28.5 Ft.
   After Development 26 Ft.
3. Quantity of Water Loss During Drilling, If Used NA Gal.
4. Quantity of Standing Water in Well Before Development ~25 Gal.

5.	Start	During				End
Volume (Gal.)	0					100
Specific Conductance (µmhos/c)						
Temperature (C)						
pH (s.u.)						

6. Depth from Top of Well Casing to Bottom of Well 45 (not final casing level) Ft.
7. Screen Length 30 Ft.
8. Depth to Top of Sediment: Before Development 44.5 Ft.
   After Development 45 Ft.
9. Physical Character of Water Turbid gray color; silt with trace to no fine sand
10. Type and Size of Well Development Equipment Used Surge block, air lift
11. Description of Surge Technique, if Used Surge block; used drill rig to aid in surging
12. Height of Well Casing Above Ground Surface -2.0 Ft.
13. Quantity of Water Removed 100 Gal.
14. 1-Pint Water Sample Collected NA (time)

*Development Conditions:
(1) Well Water is Reasonably Clear
(2) Sediment Thickness ≤5% of Screen Length

15. QA/QC: Development Performed by LCR/RWS

Site Manager LCR

MONITORING WELL DEVELOPMENT DATA

Well No. RW-7 Job Name Hussmann (Seco Products Facility)

Job Number Z-370-01 Date Developed 2/15/96 Developed By Un. Geoscience

1. Date of Installation 2/8/96
2. Static Water Level: Before Development 27.5 Ft.
   After Development 26 Ft.
3. Quantity of Water Loss During Drilling, If Used NA Gal.
4. Quantity of Standing Water in Well Before Development 26 Gal.

5.	Start	During				End
Volume (Gal.)	0					75
Specific Conductance (μmhos/c)						
Temperature (C)						
pH (s.u.)						

6. Depth from Top of Well Casing to Bottom of Well 50 (not final casing level) Ft.
7. Screen Length 35 Ft.
8. Depth to Top of Sediment: Before Development 49.5 Ft.
   After Development 50 Ft.
9. Physical Character of Water Turbid gray color; silt with trace to no fine sand
10. Type and Size of Well Development Equipment Used Surge block, air lift
11. Description of Surge Technique, if Used Surge block; used drill rig to aid in surging
12. Height of Well Casing Above Ground Surface -2.0 Ft.
13. Quantity of Water Removed 75 Gal.
14. 1-Pint Water Sample Collected NA (time)

*Development Conditions:
(1) Well Water is Reasonably Clear
(2) Sediment Thickness ≤5% of Screen Length

15. QA/QC: Development Performed by LCR/RWS

Site Manager LCR

APPENDIX E

Field Logs

12/15 cont - Went to check flow @ well head heard the starter disengage. Fuses had blown again. Did not have time to investigate cause any further. Will have to pull pump/motor

1-12-96 RWS, RAG onsite 10:00 set up Hermit @ RW-3, turn on + allow to pump. RW-4 not frozen, pumping @ ≈ 1 gpm, All 3 fuses in RW-2 bad, replace + start, imm. b+ starter trips + blows 1 fuse. Res. to motor windings + to ground all appear to be within specs. Replace fuse + try again, works for ≈ 2 min, then starter trips + blow 2 fuses. pull motor, splice 1 float lead + replace cable @ 1 location. disconnect leads from motor + test @ box, meas. between 500 k + 1.5 MΩ between motor

leads (should be ∞ Ω). Res. appear to be ok. from box to junc. box in well pit, bad below this point. plan on coming out next week to replace motor leads offsite 3:30

1-16-96 replace wiring in RW-2, replace valve + plumbing. bottom of flow meter froze + broken, use bottom from RW-5. pump working + pumping @ ≈ 12-16 gpm. clean pumpin RW-4. flow @ tower ≈ 20 gpm offsite 3:30

2/1/96 Weather: ~18°F Flurries
LCR on site @ 10:30, Layne Geoscience crew arrived @ 10:45. Conducted site safety meeting. Discussed work plan. Crew starts by fixing/setting up decon pad.

~11:30 Took rig down to MW-1/MO-2 to set up for final closure. Used jackhammers to break concrete around MO-2 protective casing. Successfully pulled entire MW-4 well out of the ground. Grouted the hole to the surface. Followed closure procedure - break bottom, fill with grout pull, grout, pull, grout. MW-1 measured 25.5' from top of casing to bottom

~13:15 Removed protective cover from MO-2. Used rig to help break cement and pull cover off. Pipe/casing broke while pulling - grouted pipe in place per warden. Measured pipe/well @ 90'.

~14:00 Moved over to close/abandon MO-1. Measured well depth @ 90.5. Same as MW-4; pipe broke off during pull grouted in place. Placed ~30 gallons in MO-2; down

2/1/96

~15:10 Moved over to SS-1. Measured 17.5' casing, screen, etc. Able to pull entirely out.

~15:50 Moved over to SS-2. Measured length from TOC @ 22 feet. Casing broke during pull - grouted in place

~16:10 Moved to SS-3. Casing broken off below ground level - grouted in place. United Geoscience to bring backhoe out later in project to complete abandonment. Measured 30' from groundsurface. Left site ~17:00

2/2/96 0°F Wind ~10 mph Clear, Sunny

0830 LCR onsite

0830 Drill crew arrives w/ ATV 750. Move down to MW-1 and begin setting up for work.

~0900 ATV motor/starter welding work commenced w/ rest of rig, including pulling out pump and motor

2/2/96 cont

~0930 Got rig started and moved over the hole. Swivel base frozen - used propane torch to melt off ice.

~1015 Began turning 10 1/4" HSA and overdrilling RW-1

~12:10 Lunch break. Augers @ ~35'

~12:40 Resumed drilling

~14:15 Terminated @ 54.5' bgs → 52.5' of overdrilling. Began pulling out augers. Casing and screen primarily in the last 18' of augers. The well was telescoped on itself, particularly evident in lead-flight auger. Some of the six-inch screen was not a slotted or wire-wrapped ... perforated w/ ~3/8" holes. May be reason well sanded up.

~15:00 Started to drill down again w/ 10 1/4 augers in order to set new/replacement recovery well.

~16:00 At about 45-50, realize inside rods are separated. Pull 20' feet of rods out. Can see top of rods down augers. Due to screen and casing frozen/stuck inside

2/2/96 cont

last remaining flight, they [illegible] overdrill to recover drill rods. [illegible] to clean-up work area. Will remove materials from augers in their [illegible] over the weekend and overdrill on Monday

~1700 Sign out / depart site

2/5/96

Weather: Cloudy 15°

~0830 LCK on-site

0845 Unitech Geoscience crew arrives. Had problems removing well from augers. Began setting up / warming up rig. Crew [illegible] out a 20'+ rod with hook to try to snag the hex rods.

0910 Began trying to snag the rods, but no success.

~0920 Tried to retrieve by overdrilling to ~54' bgs. Then pulled augers but rod did not come up (pulled 20')

~0945 Tried rod with hook again w/ no success.

2/5/96 cont

~1000 Started to overdrill again to recover hex rods
10:40 No further success. Crew left to get a better flashlight to try to use the hook to recover hex rods
11:20 Crew returns - tries again w/ better illumination - not successful. Left site again to get a slip ring able to go over hex rods - ~25' bgs.
~12:15 Trying to get to slip ring over hex rod. Snagged the hex rod but couldn't pull it as slip ring catches inside the augers
~12:40 Crew leaves to get the slip-ring shortened so that it will fit while pulling.
~13:20 Try to get slip ring on rods. Got slip ring on - during pull, the slip-ring broke.
~13:50 Went to shop to fashion a new slip ring
~15:10 Crew returns and tries to recover hex rods Slip ring having trouble "biting" on rods.
~16:10 Left site - drill crew remained to try and retrieve rods which had been brought to ~20' bgs

2/6/96 Weather ~20°F [illegible]

0750 [illegible] onsite. Crew arrived @ 0730. Crew informs me that the hex rods were successfully recovered @ ~1800 yesterday. Drilling down to target depth. [illegible] presently @ 40'
~0900 Augers @ 52'; pulled hex rods out and set up to place well
~0945 Start placing screen and casing in augers. 50.5 feet of total well w/
~~10:10~~ 40' of #10 slot Johnson wirewrap, 10 feet of casing and 0.5' of end cap.
~10:10 Start adding filter pack sand. Hole is staying open @ depth - probable smearing of clay and addition of water the reason why.
~12:10 Finish placing filter sand. Used 38 #100 bags. Bottom of well @ 50' bgs Sand @ ~7.5 bgs (2' above TOS). Added Enviroplug bentonite chips - medium to 5' from TOC (3') - used 3 bags Sufficient water in hole to hydrate
~12:20 Start clean up around well site. Estimate ~500 gallons added to maintain head.

2/6/96

~13:40 Augers are removed from RW-1 and brought to decon pad. Soil barrels moved to upper level in vicinity of trailers and RW-4. Crew to start decon and get 3¼" HSA from shop to drill pilot holes on south side for new recovery wells.

~14:16 RWS arrives to assist in sampling pilot hole for RW-6 located approximately 30' East of MW-6.

~14:20 Crew arrives w/ 3¼" HSA. Get ready to go to RW-6

~15:00 Set up on RW-6 and began drilling w/ 3¼" HSA w/ continuous split spoon sampling. DJM onsite

~16:00 Augers @ ~30'. DJM departs

~16:30 Boring completed w/ last sample from 40-42' bgs. Crew breaks rods & augers and cleans up drill area

16:45 Finished clean-up - left site

2/7/96 Weather Overcast ~35° @ 0800

0800 LCF, RWS onsite; drill crew onsite. Set up to drill w/ 10¼" HSA @ RW-6.

11:10 drilling completed, begin installing 6" well \w 30' of screen bottom @ ~42.0

sand pack-
the Morie Co. Filtration Media, 50lb bag, GA-9

13:00 complete well placement 60 bags of sand to 8', 2 bags of bentonite to 3'
Hydrated bentonite. Crew begins cleaning around RW-6. Start preparing for RW-7

~13:50 Obtained monthly tower sample for P. Staatmann

~14:30 Moved rig to location for RW-7.

~14:45 Started drilling @ RW-7

16:20 Clutch on rig not working well. Stop drilling - last sample from 32-34'. Clean up before leaving.

~16:45 Depart site

2/8/96 Weather Overcast 50° @ 0745

0745 LCK onsite. Crew arrived @ 0730 to fix clutch.
0800 Rig is operational after bleeding and refilling clutch line. Resume drilling of RW-7 pilot hole.
0850 Boring terminated after collecting last sample @ 47'. Start pullout [illegible]
0930 Set up to drill w/ 10¼ HSA
~0945 Start drilling w/ 10¼ HSA @ RW-7
~11:15 Augers @ 40' bgs. Evident that drilling is harder - driller is fighting the hole.
~12:15 Little progress - cuttings not coming out of the hole.
~1300 Stopped drilling - hole probably @ 46.5'. Set up to place well. Due to uncertainty of hole depth open, had well placed @ the bottom w/o sand layer of 1'.
~1340 Well in place, begin setting filter pack sand. Bottom of well appears to be @ 42'. Used 35' of wire wrap screen.
15:05 Sand brought to ~~10~~ 10' bgs - Driller was supposed to go to 9' - then informs me that his reference point is TOC, not ground surface! Used 58 50# bags

2/8/96

15:10 Ready to place bentonite seal. Used 2 bags of Enviroplug Medium. Seal @ 4' bgs. Added water to hydrate. Began cleanup of drill site: drummed cuttings; removed augers. Worked on plumbing connections for RW-1 while crew continued cleanup.
1645 Shutdown for the day - left site

2/9/96 Weather cloudy 30°
~0800 LCK RWS onsite.
~0830 Crew onsite. Set up for decon of augers and development @ RW-1
10:00 Begin surge block development in the lower 20' of screen
~11:15 Surge upper 20' of screen. Driller indicates ~ ½ foot of sediment in well bottom
~12:15 Completed surging. Set up to use airlift to remove fines and water from well.
~1400 Setting airlift line in hole for RW-1

2/9/96 cont

1430 Start pumping @ RW-1 using airlift directly into the treatment system.

1445 No visible increase in flow @ tower. Put connection @ RW-1 to view discharge. Extremely turbid gray with discharge @ ~1 gpm

16:30 dis-assembled pump on RW-1, leave site

2/12/96 Weather Ptly Cloudy ~25° @ 0800

0800 CCK on site. Schmitt & helper on site @ ~0815. Operator of Ditch Witch on site - Mike Michalett. Schmitt advised that rig would be out tomorrow - not today - to finish development and move barrels

~0900 Set-up to start trenching - hand dug @ RW-5 to find tie-in source. Found that RW-5 ended in a "T", so hook in will be easier. Hand dug @ location to cross the gas line. Found steel line below 3' - will cross the gas line w/ PVC recovery line just above the gas line.

~09:15 Trenching started from RW-5 toward the west receiving gate.

2/12/96

~10:00 Moved DitchWitch to RW-7 and began trenching west toward gate

~12:00 Trenching completed except for driveway.

~13:00 Used backhoe of DitchWitch to dig around abandoned wells in preparation to cut off pipes.

~1400 Sand delivered to site. Crew lay out 2" PVC line - start connecting 10' sections w/ pressure couplings to create 20' lengths.

~15:00 Ready to cross driveway - need to wait until 16:00 per SECO. Get metal pipe sleeves ready for PVC line and electrical line. Noted that trench squeezed shut due to dump truck dumping sand - will need to regen.

~16:00 Start trenching across driveway.

~16:30 Lay sleeve for PVC - covered w/ ~1/4" minus to ~1.2' from surface. Laid sleeve for electrical line. Backfilled to surface

~17:30 Shut down - taped off excavation

~17:45 Depart site.

2/13/96 ~35° Partly Cloudy @ 0320

0520 CCR, RWS onsite

0530 UG onsite - need to find some pressure couplings and 2" ball valve. located vendor - left to acquire parts

~09:00 started laying / connecting pipe starting at RW-5. Noticed that northwall of ditch/trench just east of manhole had collapsed overnight. Will need to re-dig

~10:00 learned that rig could not be brought to site - further repairs needed

~10:45 Pipe laid to driveway. UG leaves to get rented backhoe

~12:15 Call from UG - backhoe already rented. No further work possible

~12:20 Left site.

2/14/96 ~30° Cloudy @ 0200

0200 CCR, RWS onsite

0330 UG arrives w/ rig - sets up to complete development @ RW-1. Set up Hermit datalogger @ RW-5 to determine cycling / recharge rate in order to evaluate whether changing the floats is necessary

~0910 Start by surging RW-1 again. Had to bail from @ 47.5' from TOC (~50 gals) surge in 10' intervals

~1015 finish surging, bottom 347.1'

10:50 begin air pumping,
pH 8.1
temp 15.7
cond 1550
pump ~5 gal < 1 minute
then no flow - fitting on pump head (air pump) is noted, they will fix + return

11.00 - leave to repair pump

12:30 start pumping pump ~30 gal/hr sand. / well is leaking slow so they start to surge well again @ 12.55

14.30 ~48' to top of casing after surging 1½' per 10' section

14.40 ~50 gal pH 8.1
temp 14.8
cond 14.3

15:00 ~90 gal pH 8.2 temp 14.9 cond

~~8~~ 17:00 RW-1 installed & pumping. ≈10 gpm. Cycles off for 2 min, then pumps ≈ 4 gal

offsite 17:10

Note: UG finished laying the water line @ ~4:00. Decided not to turn line on to test to avoid freezing overnight since the lines would not be backfilled. Also to allow additional time for the joints/glue to cure.

2/15/96 Cloudy ~30°

0815 CCR RWS onsite, UG turned valve to test new line @ ~07:20.

0830 Visually inspected the glue joints. No leakage observed at that time. Jim Schmitt - left no other crew available. Went to check RW-1. Observed pump cycling @ 4 minutes off, then ~ 3.5 gals. No observable drawdown in piezometer to the west.

10:30 UG onsite, get ready to develop RW-7. RAG arrives to do maintenance w/ [illegible] RW-3.

~11:00 Surge of RW-7 begins. Water @ 27.5' from TOC.

~12:00 Surging of RW-7 through full length completed - water level @ 26' from TOC. Approximately 4-6" of sediment in well. Set up to pump well via airlift

~1300 Removed approximately 75 gallons. Water is turbid gray w/ silt; tr to no sand (vtg). Drums @ RW-6 still blocking access to development - continue pumping @ RW-7 until RW-6 is available.

~14:30 Pull pump from RW-7. RAG collecting soil samples from barrels from well drilling.

1500 Move rig to RW-6

15:30 Start surging RW-6, Water level @ 28.5'; soft bottom @ 44.5' from TOC

~16:20 Start pumping @ RW-6. Moving barrels from RW-7. Water @ 26' below TOC.

~16:40 Approximately 60 gallons removed. Stop to check recovery. Water level @ 37.5' below TOC

2/15/96

~16:50 Checked water level - @ ~ 36.5' from TOC indicating well is recovering. Started pumping more while setting up to pump into the system. Snowing

~17:00 Snowing heavily. Shut down. Removed ~100 gals.

~17:10 Depart site

2/16/96 Weather Mostly Sunny ~20°@ 800

0800 RAG on site

0815 LCR, RWS onsite

0830 UG crew arrives - 7 people. Begin set up to grout/pull piezometers & finish grout and cover wells abandoned on 2/1/96

0900 Called Eckelkamp to find out why their people weren't on-site for cleaning the tower. Doug @ Eckelkamp said their person walked/came out because it was "too cold"

~0900 Start digging vault area for RW-7

0930 Rig (Acker) drive head & main winch line not working. Set vault @ RW-7 Backhoe moves over to dig out RW-6. Start grouting other locations - the abandoned wells. Cut off pipe

~10:00 Set vault @ RW-6. Start backfilling sand on water line in trench in order to lay electrical line @ ~2' bgs. Grout placed in RW-1 & RW-7 to complete at working/"ground" level

11:30 Tech Acker rig off went to get pumps and other supplies to complete installation

~12:30 Reinholds Electric arrives

~13:40 rig returns w/ cable [illegible]

~13:00 Start installation of electrical controls @ RW-7 and laying electrical cable from RW-7 to RW-6 to RW-5

~14:30 Start backfilling trench between RW-6 and RW-7

~15:45 start closing [illegible]

~16:44 P-1 closing 50' of piping removal + grouted to surface.

18:15 offsite, pumps in RW-6 + RW-7 installed + control panels wired. plumbing still needs to be installed.

2/19/96
RWS onsite 7:10
UGI onsite 7:45
install plumbing & finish wiring wells - turned on ≈ 10:30, all appear O.K., set for 1 hr cycle, each pump ≈ 15 gpm.
Collect samples from RW-6 & RW-7.
UGI finishes well installations & cleanup of well closures.
Decon pad is removed down to bottom plastic, they will come out tomorrow A.M. w/ more drums to drum up remaining material

3/12/96
LCR/RWS on site.
Check on system operation - RW-7 was O.K., RW-6 had the "overload" light on, RW-5 was leaking from the flow meter, RW-1 was cycling, RW-2 @ 5 gpm, RW-3 @ ~2 gpm, and RW-4 @ ~1 gpm (cycling)

3/12/96 cont.
incompletely. Turned off RW-5 and and found bottom of flow meter (base) split. Will need new base. Off-line @ RW-5 until then. Recalibrated system @ RW-6 - operating OK. Based on flow @ tower and wells, believe low flow is in part due to lower water table and that the pumps need cleaning. Will schedule for next week.

3/19/96
LCR/RWS on site
Low flow @ tower prompted call from SECO. Checked RW-2 and found flow < 2 gpm. Pulled pump / motor and cleaned parts. Replaced & started pump - well producing @ 15 gpm. Replaced broken bottom plate @ RW-5 and turned back on - no flow on meter, some in hand. RW-4 will pump @ 6 gpm, however Warrick control unit cycling properly - suspect possible corrosion of the float

3/18/96 cont
electrodes. Will need to pull pump to check. RW-3 keeps dropping circuit. Appears to be load on motor - pull & dirty pump. RW-1 pumping @ 2 gpm and appears to be lighting the check valve. i.e. a higher pump rate occurs when disconnected from the discharge line. RW-6 and RW-7 appear to be functioning normally. Noted 29 barrels from well installation activities.

4-2-96
RWS, LCR, CS onsite 8:00
meet eckelkamp & start
washing tower, Setup Hermit
on MS-3, RW-7, RW-6, & MW-6
@ ≈ 9:00
initial WLs

MW-6	25.413
RW-6	36.603
RW-7	39.420
MS-3	26.578

clean & replace pumps
in RW-3 & RW-4 both
very fouled.
WLs @ ≈ 3:30

MW-6	25.375	Δ ≈ .04
* RW-6	32.978	
RW-7	35.013	Δ ≈ 4.4
MS-3	26.420	Δ ≈ .16

* note: RW-6 piezometer had cable cut & spliced in field - values are subject to LARGE errors

System online ≈ 14:15
pumping @ 290 gal / 14:20 min
up out RW-4
RW-3 running constantly, not shutting off, off for 5 min, pump for 1:10 @ ≈ 14 gpm

Turn on RW-4, pumping well
offsite 17:00

4/9/96
Retrieved Hermit from wells RW-6, RW-7, MS-3, MW-6. Checked system pressures @ Tower (~18 psi). All wells were functioning w/ RW-1 @ <1 gpm, RW-2 @ 15 gpm, RW-3 @ ~2 gpm, RW-4 @ ~1 gpm. Cycle times @ RW-6 : 7 ~4 hrs & ~1 day @ RW-5.

4/12/96 RWS&LCR, onsite & set up Hermit to test, turn off RW-6 & RW-7 for test, WES Bridge 29.13

4/22/96 RWS
~~RW-1~~ Vault dim.
RW-1 i 73 x 27
o 94 x 48.5
RW-2 i 72 x 27
o 84 x 46
RW-3 i 72 x 27
o 96 x 43
RW-4 i 72 x 27
o 88 x 48
RW-5 i 72 x 27
89 x 44

dump data from Hermits & restart tests @ ≈16:00. Flow @ tower ≥ 30 gpm immediately after turning on RW-6 & RW-7 offsite 16:30

4-29-96
RWS&CMS onsite, meet LCR
Dubois creek is up to top of bank, Hermit 1000 appears to be lost.
collect water samples from MW-2, MW-3, MW-4 MW-6, tower, recovery wells. 1 VOA sample was collected from tank inside SECO that H2O collects in prior to being pumped into tower.

4-30-96
onsite ≈ 9:20, meet Joe Boland, with MDNR, Neil Eltfrink Geologic Survey for well sampling audit. Sampled MW-5, MS-1, MS-2, MS-6, SWGW/B, & WL in MS-5. MS-3 was broken ≈ 2.5' bg & offset ≈ 3/4". a bailer would not fit down casing. Joe approved our methodologies & had no major comments other than he was worried about the bailers Burlington has left near some of the wells. Neil only comment was the lack of weep holes in the protective casings.

5-1-96.
RWS & CMS-onsite sample SWGW-D, DS, C, CS, A, & AS. Survey RW-6 & 7, recovery line.

5/7/96 Rain ~70°
Onsite to repair MS-3. Dug out around well, removing concrete plug, protective casing, and section of broken pipe. Break occurred ~ 2.0 down at a threaded joint. Placed a low-flow 2" compression fitting sleeve over the existing pipe and connected to new riser section. Compression fittings were tightened, then bentonite was placed around sleeve and hydrated. Quikrete was mixed & placed in the hole to bring to near surface and set the new 12" diameter protective cover (flush-mount). Used 16 60# bags. Left @ 15:45

5/9/96
RWS onsite ≈ 8:15
check well MS-3 repair, looks good. clean up around well. collect tower sample + ATAS duplicate.

5/13/96 LCK Pt Sunny 65-70°
09:00 Onsite for additional development of RW-1. Check RW-1; flowmeter not registering; take off-line + remove pump in preparation for development using Thingy-it.
~10:30 United Geoscience crew (Rob Voyt - driller) arrives onsite. Unload ATV
~11:00 Set up on RW-1; prepare to add Thingy it. Jetted Thingy-1 into screen interval. Used surge block to further stimulate removal of clay. Surging would alternate w/ letting well sit for ½ - 1 hr interval. U.G. added water to do crude falling head tests. Initial indication

5/13/96 cont
were that no significant improvement had occurred.
18:10 Crew still working on surging. Will pump out Thingy-2 and U LCK depart.
(Crew left @ 20:00 per communication w/ J. Schmidt on 5/14/96)

~~5/16/96~~
~~RWS~~ ©
5-16-96 Fax to Paul 4-2 thru 5-13

5/17/96 Sunny ~85-90° @ 12:30 pm
~12:30 LCK + CMS onsite in response to call from P. Straatmann regarding leak @ blower.
13:00 Observed operation @ tower and found no evidence of leakage, only condensation on flowmeter. Took opportunity to check each well. RW-5, #7 appear to be operating normally. RW-4 cycling for an average output of 1-2 gpm. RW-1 cycling for an average output of about

5/17/96 cont

~~Total~~ 1.5 gpm. RW-3 cycling on average output of ~3.8 gpm (Pump on for ~ 1 minute and 9.5 gallons, then off for about 1 minute(±). RW-2 runs continuously @ ~12 gpm.

~14:30 Went to get Straatmeann to have him point out what he observed. By the time we returned, "the condition" was manifest. Water was spraying from the blower air intake into the inside of the blower housing. Shut system down to see what might be happening. Removed rubber sleeve @ well discharge end to view inside tower. No indications of problem observed. Reassembled parts; turned system back on. Minimal spraying noted. Would return to test blower/motor

~1600 Depart site

5/20/96 Sunny 90°

~11:00 LCR onsite. No observed spray from blower; some spray from discharge @ sleeve exiting tower. Turned off well pumps; shut off blower. Removed outer housing to inspect. Blower vanes intact and move freely. Some water present along bottom of piping from blower to tower. Removed water discharge line to look inside tower. Used timing gun to check for proper blower revolution. Rated @ 3500 rpm; measured 3543±. Reassembled connections and restarted system. No leakage @ discharge sleeve and no spray from blower observed. RW-4 did not turn on. Starter had apparently already tripped before. Reset circuit and turned on "hand". Starter engaged then flipped off. Left power off - will return to troubleshoot. Replace protective housing over blower - will monitor. Discharge @ tower ~ 20 gpm. Note water level in Dubois Creek is receding - ~ 3 ft below bank top.

~14:30 Left site

5/20/96 cont

5/28/96
RWS, CES onsite ≈ 7:00
Remove balls from tower + start cleaning balls below lower sampling port. Balls are welded together + very hard to break out + remove (≈ 2" above lower screen). Work on balls till ≈ 11:00 then Fill lower portion of tower w H_2O, add G/A (acid) + break for lunch.
Balls are noticibly cleaner after lunch (≈ 12:00).
Eckel Kamp onsite 13:00, start repacking tower ≈ 14:30 ≈ 80% of balls below ~~sampling~~ cleaning port were cleaned before repacking. Tower back on 16:00, 24 gpm w 5 min ave. immediately after restarts.
offsite 16:15.

5/30/96
RWS/CMS onsite 7:45
begin preping drums for removal
Laidlaw onsite 8:10 (he had been on wrong side of Bldg since 6:00)
Drums loaded (19 of them) + offsite 10:30, start emptying remaining 10 drums. Replace contacts + heaters on RW-4, still did not work. Drums cleaned + stacked by septic system offsite ≈ 3:00 (flows tower 14 gpm @ 15 min. ave.)

5/31/96
RWS/CMS onsite 8:15
Replace motor + leads to RW-4, working properly (motor may be O.K. need to be checked.)
flows tower ≈ 16 gpm (5 min)
creek flooding into drainage ditches
offsite ≈ 13:00

6-19-96

CMS

Arrived on site 14:30

Turned off all wells

Poured Chlorine down #1, 2, 3, 4, 5

well	Cl
1	8
2	9
3	8
4	6
5	4

Left site 15:45

6/20

RWS/CMS onsite.
clean wells RW-2 & RW-3, both VERY dirty. ~~RW-1 pulled but did not need cleaning,~~
clean flowmeter (5) towers

6/21

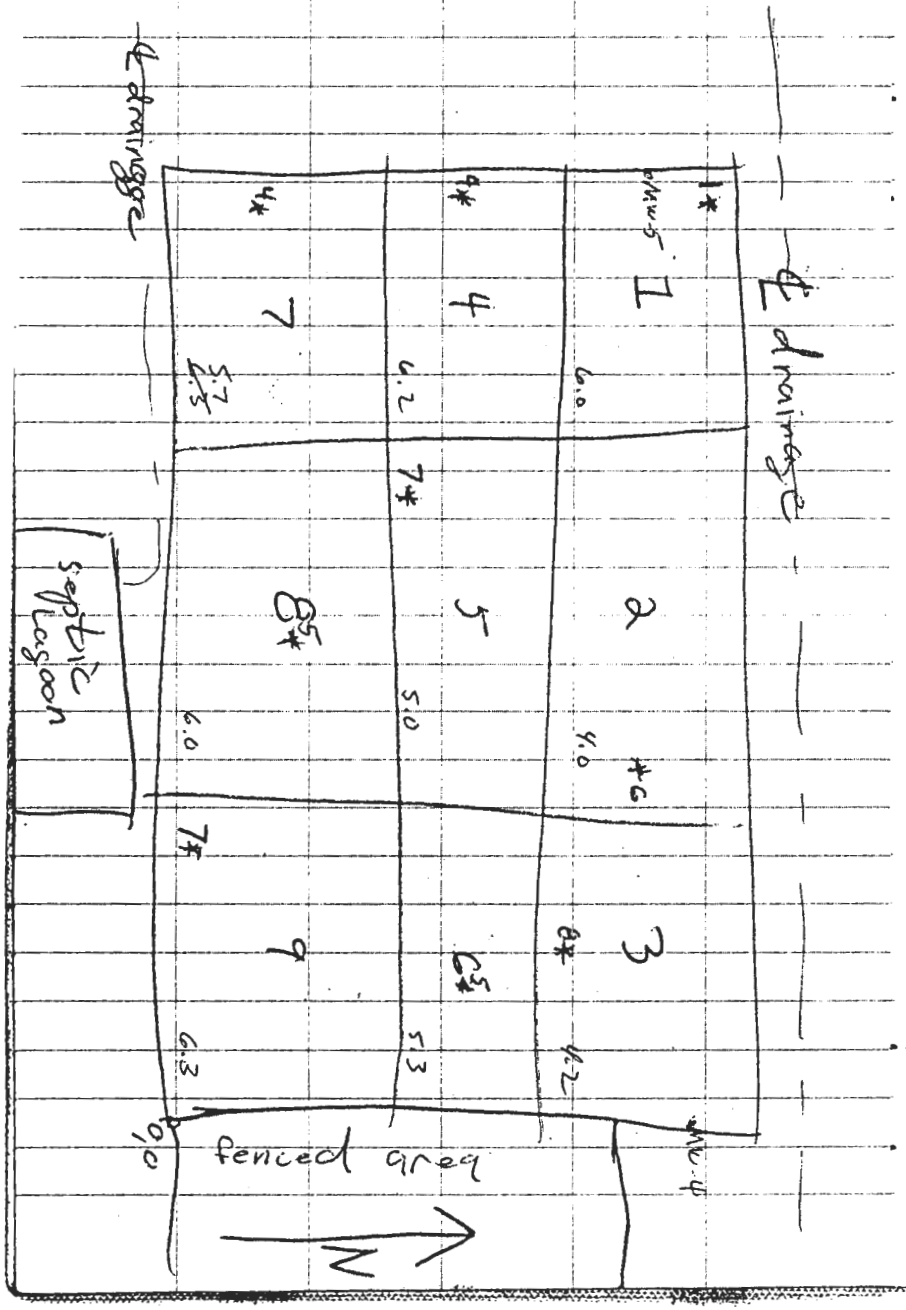
RWS/CMS onsite
pump chlorine from wells & acidize w/ G/A & B/E treatment. surge again after 3-4 hours. RW-1 pulled but did not need cleaning.

6/24

RWS/LCR onsite
reconnect wells & start pumping. Flows (gpm)

RW-1 low (cycles)
RW-2 ≈12
RW-3 ≈8
RW-4 ≈3-4 (cycles)
RW-5 low (cycles)
RW-6 " (cycles)
RW-7 " (cycles)
Tower ≈25

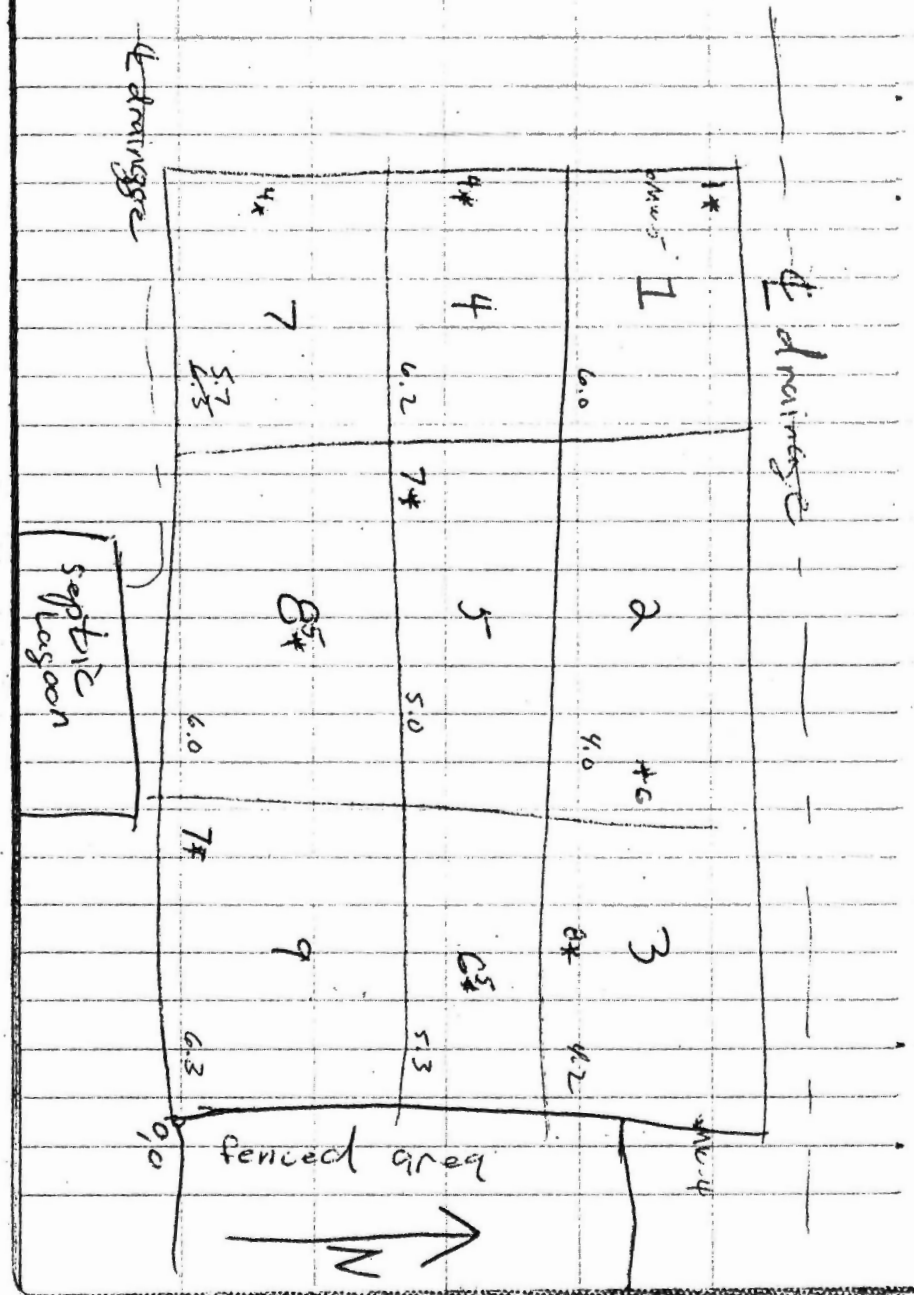
9 composite soil samples for pH collected, map next page



6-27-96
Cms/LCR

Arrived on site 12:30. Shut off blowers & all RW. Replaced plumbing on blower. Still leaking at top connection. Turned system back on at 16:30. Left site.

7-1-96 Cms/RWS
Arrived on site 12:30.
Inspect wells.
RW-1 Not cycling.
RW-2 Tripped breaker. On started. Seemed to fix problem.
Shut down System 13.00.
Removed pipe from blower. Replaced w/new pipe & couplings.



6-27-96
Cms/LCR

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7-1-96 Cms/RWS

Arrived on site 12:30.

Inspect wells.

RW-1 Not cycling.

RW-2 Tripped breaker. On started. Seemed to fix problem.

Shut down System 13:00.

Removed pipe from blower. Replaced w/new pipe & couplings.

7/10/96

Sunny 75°

LCR on site to collect monthly sample @ tower. Collect sample for pH, metals, TOX, TOC, VOA + trip blank. Noted flow meter @ tower is indicating ~23 gpm. No leaks evident in replacement section of 4" line @ tower

7/26/96

RWS, CMS onsite

all wells working ≈12 gpm from RW-2 ≈3 gpm (flow meter NOT working) from RW-3

Replace gasket to flowmeter @ tower + measure ≈15 gpm flow with only RW-2 + RW-3 on @ tower in buckets. Flowmeter @ tower not working

8/6/96

RWS, CMS onsite

remove + clean RW-2 + RW-3 - flows @ tower after cleaning ≈ 12 gpm (no other wells)

RW-1 was off, I turned it on - very slow cycling

RW-4 O.K

RW-5 - starter appears bad

RW-6 + RW-7 both in overload condition - restarted set, working O.K.

collect tower sample

9/5/96

0800 LCR, EWS - work on replacing electrical components in RW-5. RW-5 had bad starter.

~0900 Pull pump / motor out of RW-1 in preparation for abandonment

~1045 UG arrives and starts set-up.

~11:15 On hole - start to drill along side casing to break up grout seal using 3" solid flight augers

~11:45 Completed breaking up grout. Set up to drill hole in casing to set rod to help pull & recover well materials.

12:00 Drill bit too short to run through both sides / not enough room on opposite side of casing to drill. Schmidt leaves to get bit.

~12:45 Drill out other side. Pull on casing. Casing broke @ coupling adjoining well screen ~10' down.

~13:15 Discuss options as rig shutdown proceeds; crew leaves to get supplies for replacement well

13:30 Decide that must contact Wellhead

9/5/96

Protection to see whether we can use variance 0401 to grout, get new variance, or have to drill out materials. Placed call - no one in - Mike [illegible] to receive call

~13:45 Left site.

Foggy 65°

9/6/96

~0720 LCR, EWCMS on site. Pull pump / motor out of RW-3 for cleaning.

~0750 UG arrives onsite, sets up to drill new RW-1.

~08:15 Start cleaning pump parts

~0820 Start drilling well w/ 6¼ HSA & ATV rig

0920 Augers @ 50.5' BGS. Spoke to Mike G. Gave verbal on grouting well in place. Crew starts to add water to augers to maintain head against formation. Work on cleaning pump parts

~10:00 Rods & center plug out; augers being pulled. Formation holding w/ weight of water, however crew adds a few handfulls of G-150 to water w/o significant

mixing. G-150 is not likely to add much to the thickness of the fluid. Continue to pull augers - hole holding open to 49.8' after augers pulled.

~10:15 Start assembling screen and placing in borehole.

~10:30 Screen & casing in place. Some slough into well - bottom @ ~49'. Will remeasure later. Hole still open. Crew starts to prepare to tremie sand w/ 1" ID pipe.

~10:45 Sand not flowing down tremie, even w/ water. Try placing sand around screen by pouring through water column and using tremie pipe to tamp and determine sand level.

~11:15 Place 30 ½ cubic foot bags of sand (50 lb bags Morie Filtration Sand GA-9) w/ top of sand brought to w/i 7' of surface. Decided to do some surging to encourage settlement & development of sand pack before placing bentonite seal.

11:30 Crew takes lunch break & get supplies.

~13:00 Crew continues / starts development.

~14:00 Sand pack dropped to ~10' bgs. Set pump in RW-3 to circulate after clearing

~14:15 Set up to grout up old RW-1. Used [illegible] bag of Wyo Ben Enviroplug. Used tremie to place ~80 gallons of Enviroplug grout.

~15:00 Resumed surging. Crude falling head [illegible] indicate that [illegible] [illegible] [illegible] at this time - much improved over other well.

~16:00 Crew packs up for the day. Added 3 more bags of sand to bring top of sand to 6' bgs then added [illegible] [illegible] chips to ~3' from surface and hydrated. LCR [illegible] hooked up RW-3. Pumped @ 9-10 gpm for 75 gallons before semi-cycling. Flow meter slows down or briefly stops, then resumes @ ~9 gpm rate.

~16:15 Check lower flow meter - average ~20 gpm

~16:30 Left site

Pt Sunny ~65°

9/11/86

~8:10 LCR, CM onsite [illegible] cleaning pump [illegible]. UG crew member tells us that backhoe [illegible] delivered but they [illegible] get casing [illegible]. Would be back [illegible] in morning.

9/11/96

~10:00 Stop cleaning parts - clear brush from around perimeter wells

~11:00 Resume cleaning parts.

~13:00 Stopped cleaning parts after UG arrives on site. CMS gets salt to spread around wells w/ high growth to knock down weeds, etc. UG gets backhoe down to new RW-1 location to find tie-in to recovery lines. Handshovel hits concrete on east side of vault - used backhoe east & north of RW-1 control panel. Backhoe operator clips elbow (45°) w/ bucket teeth - shut down recovery system. Used handshovel to expose further.

~14:30 Dug w/ backhoe to further expose recovery line & operator catches the electrical conduit w/ backhoe teeth. PVC conduit bend - coupling @ control panel break. Had CMS turn off circuit inside SECO. No apparent break in electrical line evident in control panel.

9/11/96

~15:00 Continued digging out vault area w/ backhoe, hand digging around water & electric conduits

~15:15 Schmidt w/ UG leaves to get PVC fittings to repair line.

~16:15 Schmidt unable to find right fittings - not certain if slip coupling will work. Decided to leave system off and have UG check further

~16:30 Depart site

Sunny 60° @ 0800 9/12/96

~0800 Onsite (LCR). Call from UG about problems finding fittings.

~0830 Found supplies in St Louis - OK UG trying the slip coupling to save time. If they don't hold - UG will have to correct.

0930 UG starts repair of water line

~10:00 Sunny w/ Eckelkamp Electric tests line from RW-1 to see if yesterday's tug caused a problem. Checks OK. He does not know what might be

causing the overload shutdowns @ RW-6, 7. He thought RW-2 could be age of pump, starter or setting. At this time he did not suggest any modifications.

~11:45 Still working on plumbing from water line to new vault. Four foot riser casing vault in place. Take break to get supplies/lunch. LCK picks up coil @ Crescent

~13:00 Put new starter on RW-5.

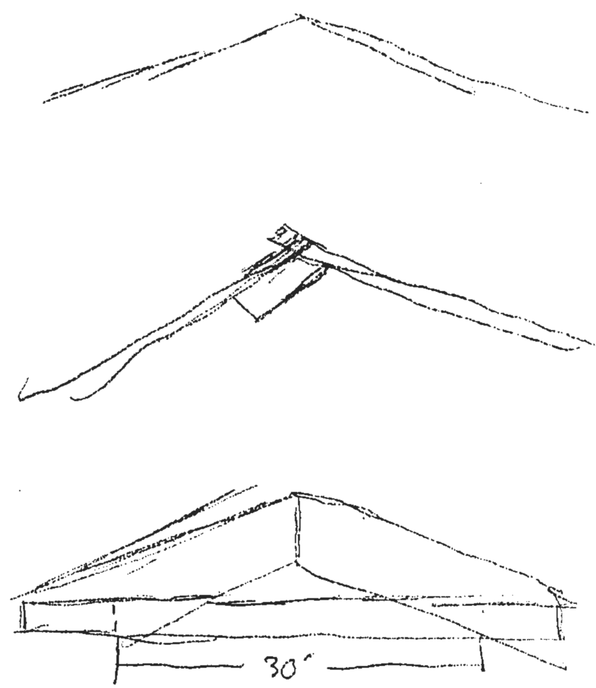
~13:30 OG resumes plumbing & electrical conduit placement for new RW-1 vault. Set up to pump RW-1 and discharge water into ~100 gallon tank. Static @ ~ ~~20~~ 18' BGS ±

~15:30 Plumbing, wiring completed. Turned on system to test. Lines hold - begin backfill

~16:30 Set pump into RW-1. Pumped for ~ 3.5 minutes @ ~9 gpm then started to cycle. Took ~9 minutes for water to recover ~8'. Observed only one cycle.

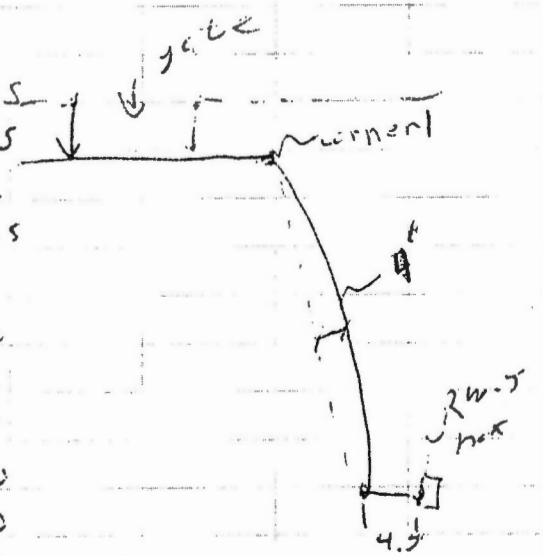
60 x 21 [illegible]

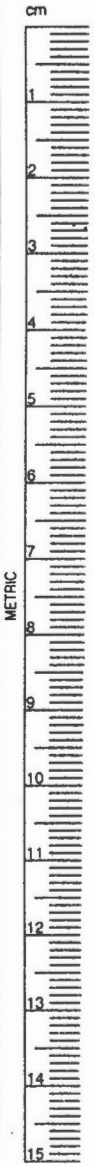
73 x 27 [illegible] min



[illegible]

1	11'
4	10'
7	9'
10	8
13	7.5
16	6.5
19	7.
Gate & 22	6.5
25	5.0
28	4.6
31	5.6
34	7.6
37	10.0
E curve 40	19.0
W curve 4	20.5
11' W of	21.0 — corner!





Sept 13, 1996

LCR site - Check operation of RW-1. Still working - recharge rate better than well recently abandoned - but w/ creek approaching normal stage, comparison is not equal. Tried to replace old Warrick controller in RW-3 - didn't work per wiring instructions. Replaced fuses (2) in RW-5. Turned on again, blew 1 fuse. Changed wiring @ top to see if it made a difference. Caused heater to glow and blow another fuse. Disconnected wires at bottom of starter, i.e. ones to well & motor. Checked RW-6 & 7. Both in "overload". Reset, ran ok. Tower flow @ ~20 gpm

LCR, CMS 10/2/96

On site for well maintenance. Replaced Warrick level control units in RW-3. Needed to reverse "7" & "10" leads in Warrick to work. Flow meter @ RW-3 dirty and not registering, so not possible to observe. Note that Warrick did not cause starter to

10/2/96.

disengage during first three minutes of operation. Took the old Warrick from RW-3 to RW-5 to replace broken one on RW-5. Re-connected wires to pump motor and re-wired the input to the starter. When turned on, circuit breaker in SECO tripped. Asked Eckelkamp to check. Wiring appeared ok - suspected short in down-well wires or motor. Pulled pump/motor from RW-5. Found a split in the splice connecting motor leads to power. Cut and respliced leads (Eckelkamp checked motor - no obvious short. Replaced in well - operated well. Pumped @ >10 gpm until evacuated, then shut off. Checked RW-1. Well system, but flow meter indicated rate of 5 gpm, compared to ~9 gpm when installed. When allowed to discharge to single post vs treatment system, rate kicked up. Suggests problem w/ pump/possibly motor. Checked RW-6 and RW-7.

10/2/96

Both in overload. Reset and ran fine. Wells were reset @ ~0900 and had not tripped overload as of ~1500. Need to check w/ Coydie to see what might be going on with controllers.

10/10/96

LCR, CMS on site @ ~0800 to meet BSAT for Lime application. Rain & site overnight - some standing water. Showed boundaries to Rick & Roger of BSAT. They would check to see if lime could still be spread and tilled. Went to RW-1, still slow. Pulled well pump & motor and found it very dirty. Significant build up in 1 month. No obvious damaged parts. Replaced w/ clean parts and reset in well. Purged @ ~9 gpm. Cycling rate/period increased 1:45, 4:30, 9:10. Otherwise, operation appeared OK. RW-6 and RW-7 read 'overload'. Checked w/ Reinkemeyer who said he found blinking overload 3 times in last week, though one time

10/10/96

RW-9 was @ underload (OK). Reset both ~~wells~~ today wells. Leveled bottom of vault for RW-6 and placed layer of Quickrete (sand mix) along floor of vault to improve wet-weather use; minimize water infiltration along bottom; keep interior cleaner. Since flow meter @ RW-3 was not working, pulled pump & motor and cleaned pump. Pump very dirty - silt buildup and scale on parts. The lime truck arrived on site ~1400 & spread the 9 tons across the area between the ditches, the west fence of the lagoon and out to the west end of the flood plain.

10/28/96 RWS/CMS onsite
start sampling wells.
RW6 & 7 in overload when
we arrived onsite
LCR onsite 11:30 - 12:30
to check RW6 & 7.
RW7 in overload when
we depart (14:15). voltage
OK (490 all 3 phases)
amps when pailing - ≈1.7
when running - ≈1.3-1.4

10/29 tower sample(s) 9:00
flow(s) tower ≈11.5 gpm (1min ave)
Recovery well samples
RW-3 9:16
RW-2 9:15
RW-1 9:20
RW-4 9:25
RW-5 ~~9:30~~
WL, MS-5 24.58
RW-6 15:50
RW-7 15:50

finished sampling
wells, turned off
RW wells & poured
in chlorine

RW-1	4.5	gal
RW-2	6	↓
RW-3	6	
RW-4	4.5	
RW-5		
RW-6	8	
RW-7	3	

10/30 ~~chlorine~~ acid treat
RW-2. RW-4, RW-1, &
RW-3 still smell of
chlorine & will be treated
tomorrow.
Pulled RW-7. All parts
clean, pump appears
O.K. Remove motor &
send in for testing.

10-31 acid treat RW-3 & RW-4. RW-1 blew starter. We replace starter & it trips breaker in Bldg. Clean RW-2 & turn on, 13 spm flow

start removing balls from tower, replace plumbing on RW-4 & insert electrical box

W. Creek 27.57

11-1 sample RW-5
WL 18.32
RW-5 (11-1-96) @ 13:15

finish cleaning tower & turn system on. RW-3, 4 working good (estimate 2 spm @ tower, flowmeter not working)

RW-1, 5, 6, & 7 not working per previous notes

survey new RW 1
ela BM old RW1 BM
HI 2.52
RW-1 4.15
loc 85' N, 6.5' East of RW-1 BM

11/27 RW Onsite
try restricting flow @ RW-6 to test overload condition - it still immm. trips.
- check condition RW 2, 3, 4, 5 - no sign of freezing.
- replace flowmeter @ tower, works good
flow @ RW-4 ≈ 2-3 spm
RW-3 ≈ 2-3 spm
RW-2 ≈ 13-14 spm

5 min flow @ tower ≈ 15 spm

12-6-96 CMS/LCR Onsite 9:00.

Met Dave Wakeman from Union Electric. We tried to solve the problems related to RW 6, 7, 5, 1

Could not figure out problem on RW6 & RW 7.

RW-1 had a problem with the wiring to the motor.

Dave left the site at 13:00 & would contact coyote (manufactures of the pump system on RW 6 & 7) we should call him if the problem persists after we fix RW 1 & 5

RW-5 needs to have the ~~Orca~~ Warrick replaced.

CMS/LCR pulled RW-1 & fixed the wiring. RW-1 pump running fine but the ~~Orca~~ Warrick seems to be malfunctioning. We could not turn off the pump after it started.

CMS/LCR collected tower sample & left site at 15:45.

12/16/96
CMS arrived on site at 13:00

Observed no flow out the tower.

Checked each well.

RW-2 starter tripped Reset the starter and the pump is working. The Flow meter does not work but there is flow out of the sampling port. The flow at the tower is approximately 1-2 gallons per minute.

RW-3 has power to the motor but no flow out the sampling port indicating that the pump is clogged.

RW-4 has power to the motor but no flow out the sampling port indicating the pump is clogged.

Replaced Warrick (level pump down device) on RW-1. When RW-1 is turned on the pump pumps water but will not shut off when all of the water is pumped out of the well. The Warrick works when the reference points (long, short & ground wires) are disconnected. But when the reference wires are connected the warrick does not work properly. This implies that the wires are hooked up wrong or there is a short in the system.

Replaced the warrick in RW-5. ~~Turned RW-5~~. When RW-5 is turned on the heater coils glow so I shut RW-5 off. Replaced the blown fuse. Disconnect the motor leads & turned ~~the~~ RW-5 on.

The starter engayed without a problem indicating the pump or wiring in RW-5 is faulty.

RW-6 & RW-7 were both in overload condition so I re set them. Both wells pumped & went to under load.

Offsite 15:50

APPENDIX F

Waste Manifests

LAIDLAW ENVIRONMENTAL SERVICES

FORM A

Customer Notification And Certification

Generator Name/Location: Heissman Corp/Washington MO

EPA I.D. Number: MDD068549492

Waste Profile or ARF Designation: I492MS101

Manifest Number: 0001

EPA Waste Number(s): F002

Waste Analysis Available? Yes (attached) _____ No ___✓___ On file at receiving facility _____

Unrestricted Waste Notification (*Category 1*)

Mark the statement below if you generate a waste that is not a land disposal restricted waste (the waste has no applicable treatment standards).

☐ *I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is not restricted as specified in 40 CFR §268, Subpart D or any applicable prohibitions set forth in 40 CFR §268.32 or RCRA Section 3004(d).*

Restricted Waste/Debris Notification (*Category 2*)

Mark statement (2a) below if you generate a waste that is restricted from land disposal (the waste has applicable treatment standards). NOTE-1: A waste may pass one or more standards and require treatment or be varianced for others. In this case, all applicable categories must be checked. NOTE-2: D001, D002 and D012 - D043 wastes must be evaluated for underlying constituents found in 40 CFR §268. 48 (Table UTS), that are reasonably expected to be present. A list of these constituents must be included on FORM B, or attached to and accompany this notification with each waste shipment. Mark statement (2b) if you generate a debris waste that will be treated to the alternate debris standards located in 40 CFR §268.45.

☒ **(2a) Restricted Waste Notification**

I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is subject to the treatment standards specified in 40 CFR §268 Subpart D. The waste: (a) must be treated to the appropriate regulatory treatment standard, by the appropriate regulatory treatment method; (b) qualifies for a variance as described in category 3 below; or (c) meets some or all of the standards as described in Category 4 below.

☐ **(2b) Alternate Debris Treatment Notification: This hazardous debris is subject to the alternate treatment standards of 40 CFR §268.45.**

The waste contains the following contaminants subject to treatment [check all that apply]:

_____ **§268.45(b)(1) - Toxicity characteristic debris;**

_____ **§268.45(b)(2) - Debris contaminated with listed waste;**

_____ **§268.45(b)(3) - Cyanide reactive debris.**

Restricted Waste Variance Notification (*Category 3*)

Mark the statement below and list the applicable variance date on Form B, if you generate a waste which does not require treatment prior to land disposal because of a variance (including a case-by-case extension under 40 CFR §268.5, a nationwide variance under 40 CFR §268 Subpart C, a no migration petition under 40 CFR §268.6, or other applicable variance).

☐ *I notify pursuant to 40 CFR §268.7(a)(3) that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that this waste is subject to a national capacity variance under 40 CFR §268 Subpart C, or a case-by-case extension under 40 CFR §268.5, or an exemption under 40 CFR §268.6.*

Restricted Waste Certification (Treatment Standards Met) (*Category 4*)

Mark the certification statement below if you generate a waste that is restricted from land disposal (the waste has applicable treatment standards), and the waste meets the standards as generated. Note: All applicable constituent standards must be accounted for. A waste may pass one or more standards and require treatment or be variance for other constituents. In this case, all applicable categories must be checked.

☐ *I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA § 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.*

SIGNATURE: Russell W Schwab DATE: 5/30/96

PRINT NAME: Russell W Schwab TITLE: authorized agent for Heissman Corp.

LAIDLAW ENVIRONMENTAL SERVICES

FORM A

Customer Notification And Certification

Generator Name/Location: Hussman Corp/Washington MO

EPA I.D. Number: MDD068549492

Waste Profile or ARF Designation: I492MS101

Manifest Number: 0001

EPA Waste Number(s): F002

Waste Analysis Available? Yes (attached) _____ No ___ On file at receiving facility _____

Unrestricted Waste Notification (*Category 1*)

Mark the statement below if you generate a waste that is not a land disposal restricted waste (the waste has no applicable treatment standards).

☐ ***I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is not restricted as specified in 40 CFR §268, Subpart D or any applicable prohibitions set forth in 40 CFR §268.32 or RCRA Section 3004(d).***

Restricted Waste/Debris Notification (*Category 2*)

Mark statement (2a) below if you generate a waste that is restricted from land disposal (the waste has applicable treatment standards). NOTE-1: A waste may pass one or more standards and require treatment or be varianced for others. In this case, all applicable categories must be checked. NOTE-2: D001, D002 and D012 - D043 wastes must be evaluated for underlying constituents found in 40 CFR §268. 48 (Table UTS), that are reasonably expected to be present. A list of these constituents must be included on FORM B, or attached to and accompany this notification with each waste shipment. Mark statement (2b) if you generate a debris waste that will be treated to the alternate debris standards located in 40 CFR §268.45.

☒ **(2a) Restricted Waste Notification**

I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is subject to the treatment standards specified in 40 CFR §268 Subpart D. The waste: (a) must be treated to the appropriate regulatory treatment standard, by the appropriate regulatory treatment method; (b) qualifies for a variance as described in category 3 below; or (c) meets some or all of the standards as described in Category 4 below.

☐ **(2b) Alternate Debris Treatment Notification: This hazardous debris is subject to the alternate treatment standards of 40 CFR §268.45.**

The waste contains the following contaminants subject to treatment [check all that apply]:

_____ **§268.45(b)(1) - Toxicity characteristic debris;**

_____ **§268.45(b)(2) - Debris contaminated with listed waste;**

_____ **§268.45(b)(3) - Cyanide reactive debris.**

Restricted Waste Variance Notification (*Category 3*)

Mark the statement below and list the applicable variance date on Form B, if you generate a waste which does not require treatment prior to land disposal because of a variance (including a case-by-case extension under 40 CFR §268.5, a nationwide variance under 40 CFR §268 Subpart C, a no migration petition under 40 CFR §268.6, or other applicable variance).

☐ ***I notify pursuant to 40 CFR §268.7(a)(3) that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that this waste is subject to a national capacity variance under 40 CFR §268 Subpart C, or a case-by-case extension under 40 CFR §268.5, or an exemption under 40 CFR §268.6.***

Restricted Waste Certification (Treatment Standards Met) (*Category 4*)

Mark the certification statement below if you generate a waste that is restricted from land disposal (the waste has applicable treatment standards), and the waste meets the standards as generated. Note: All applicable constituent standards must be accounted for. A waste may pass one or more standards and require treatment or be variance for other constituents. In this case, all applicable categories must be checked.

☐ ***I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA § 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.***

SIGNATURE: Russell W Schwab DATE: 5/30/96

PRINT NAME: _____ TITLE: authorized agent for Hussman Corp.

FORM B1 *(Must be accompanied by Form A)*

Generator Name/Location: Hussman Corp / Washington MO Page 2 of 2

EPA I.D. Number: MOD068549495 Manifest: 0001

Waste Profile or ARF	Category No.	EPA or State Waste Code	Variance Date	Description/Sub Category	Treatability Group (WW or NWW)	Waste Constituents or Legend #
I492MS01	2A	F002	NONE		NWW	21

CONSTITUENTS IN SOLVENT, CALIFORNIA LIST AND CHARACTERISTIC WASTES.

F001 - F005 spent solvents

Legend #	Constituent Name
1	Acetone
2	Benzene
3	n-Butyl alcohol
*4	Carbon disulfide
5	Carbon tetrachloride
6	Chlorobenzene
7	Cresol (m-and p-isomers)
8	o-Cresol
*9	Cyclohexanone
10	1,2-Dichlorobenzene
11	Ethyl Acetate
12	Ethyl Benzene
13	Ethyl Ether
14	Isobutyl alcohol
*15	Methanol
16	Methylene Chloride
17	Methyl Ethyl Ketone
18	Methyl isobutyl ketone
19	Nitrobenzene
20	Pyridine
21	Tetrachloroethylene
22	Toluene
23	1,1,1-Trichloroethane
24	1,1,2-Trichloroethane
25	Trichlorothylene
26	1,1,2-Trichloro-1,2,2-trifluoroethane
27	Trichloromonofluoro-methane
28	Xylenes (total)

Legends 29-31 RESERVED

** If these constituents are present alone or in any combination of the three, then non waste water forms of these constituents must be treated to TCLP levels as indicated in §268.40.*

Technology-Based standards For F005 when the constituent is the only listed F00-F005 solvent

Legend #	Constituent Name
32	2-Ethoxyethanol
33	2-Nitropropane

Legends 34-43 RESERVED

CALIFORNIA LIST WASTES

Legend #	Constituent Name
44	Nickel
45	Thallium
46	Cyanide (Liquid)
47	Liquid Polychlorinated Biphenyls (PCB's)
48	Halogenated Organic compounds (HOC's)

SEE BACK FOR THE UNIVERSAL TREATMENT STANDARDS (UTS), Legends 49 - 264

NSTRUCTIONS FOR THE COM-
LETION OF THIS FORM ARE ON A
F RATE SHEET.
DOCUMENT MUST BE USED
ALL MISSOURI-DESTINED
MENTS

MISSOURI DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality
Hazardous Waste Program
P.O. Box 176 Jefferson City, Missouri 65102
314-751-3176

HAZARDOUS WASTE MANIFEST

EMERGENCY RESPONSE
U.S. COAST GUARD
1-800-424-8802
CHEM TREC
1-800-424-9300
DEPT. OF NATURAL RESOURCES
314-634-2436

print or type (Form designed for use on elite (12-pitch) typewriter.)

Form Approved OMB No 2050-0039, Expires 9-30-96

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of ___ | Information in the shaded areas is required by State law.

3. Generator's Name and Mailing Address

4. Generator's Phone (314)

A. Missouri Manifest Document Number

B. State Generator's ID

C. MO Trans. ID

D. Transporter 1 Phone

E. MO Trans. ID

F. Transporter 2 Phone

5. Transporter 1 Company Name | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers Number	Type	13. Total Quantity	14. Unit Wt/Vol.	
a.					Waste No. / EPA WASTE CODE / STATE
b.					EPA WASTE CODE / STATE
c.					EPA WASTE CODE / STATE
d.					EPA WASTE CODE / STATE

J. Additional Descriptions for Materials Listed Above | K. Handling Codes for Wastes Listed Above | L. | M. | COMMENTS

15. Special Handling Instructions and Additional Information

INFOTRAC 800-535-5053 (536)

a. Guide # 31 b. Guide # c. Guide # d. Guide #

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and applicable state regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method available to me that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
		05	31	96

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name	Signature	Month	Day	Year
		05	31	96

18. Transporter 2 Acknowledgement of Receipt of Materials — Date

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19. — Date

Printed/Typed Name	Signature	Month	Day	Year

EPA Form 8700-22 (Rev. 9-94) MDNR-HWG 10

GENERATOR COPY — PART 6

IMPORTANT

SEE INSTRUCTIONS SHOULD PART 1 & 2 FAIL TO RETURN WITHIN 35 DAYS

LAIDLAW ENVIRONMENTAL SERVICES

Government Services

June 13, 1996

HUSSMAN CORP
5025 OLD HIGHWAY 100 EAST
WASHINGTON MO 63090

Dear Sir/Madam:

In accordance with the requirements of 40 CFR 264.12 (b), Laidlaw Environmental Services (GS), Inc. is hereby notifying you that our facility located at 3536 Fite Road in Millington, Tennessee (USEPA ID. No. TND 000 614 321) has the appropriate permit(s) for, and can accept the hazardous wastes noted below.

PROFILE #	WASTE STREAM NAME
I492MS101	CONTAMINATED SOIL WASTE

On behalf of Laidlaw,

William Coulter
Material Routing Coordinator

prs

Laidlaw Environmental Services (GS), Inc.
3536 Fite Road Millington, Tennessee 38053
Phone 901.357.3600 Fax 901.357.3612

APPENDIX G

Abandonment and Certification Records

P.O. BOX 250
ROLLA, MO
65401
(314) 368-2165
FAX: (314) 368-2111

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
WELLHEAD PROTECTION SECTION
WELL DRILLERS UNIT

VARIANCE REQUEST FORM

VARIANCE NUMBER: 00401

WELL OWNER INFORMATION

NAME (LAST, FIRST, MIDDLE): SECO PRODUCTS CORPORATION - MIKE MCDERMOTT

ADDRESS: 5025 OLD HIGHWAY 100 EAST

CITY	STATE	ZIP	TELEPHONE
WASHINGTON	MO	63090	

WELL LOCATION

COUNTY: FRANKLIN

_____ ¼, _____ ¼, _____ ¼, Section 25 Township 44N Range 01W E/W

CONTRACTOR INFORMATION

CONTRACTOR NAME	PERMIT NUMBER
SHANNON AND WILSON INC - LARRY ROSEN	2004PM

ADDRESS: 11500 OLIVE BLVD SUITE 276

CITY	STATE	ZIP	TELEPHONE
ST LOUIS	MO	63141	(314) 872-8170

Type of Variance: VARIANCE GRANTED TO PLUG SIX MONITORING WELLS BY PULLING THE CASING AND SCREEN WHILE SIMULTANEOUSLY PLACING GROUT. IF THE CASING BREAKS DURING PLUGGING, THE REMAINDER OF THE PIPE IS NOT REQUIRED TO BE DRILLED OUT BUT BE LEFT IN THE BOREHOLE AND GROUTED IN PLACE.

RULE NUMBER MODIFIED: 10 CSR 23- 4.080

Reason for Variance: MINIMIZE HAZARDOUS WASTE GENERATION

VARIANCE APPROVED (DATE): 1-24-96	BY: Michael J. Gawedzinski MICHAEL GAWEDZINSKI
COPY SENT TO OWNER (DATE): 1-24-96	BY: SUSAN DAVAULT
COPY SENT TO CONTRACTOR (DATE): 1-24-96	BY: SUSAN DAVAULT

P.O. BOX 250
ROLLA, MO
65401
(314) 368-2165
FAX: (314) 368-2111

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY
WELLHEAD PROTECTION SECTION
WELL DRILLERS UNIT

VARIANCE REQUEST FORM

VARIANCE NUMBER: 546

WELL OWNER INFORMATION

NAME (LAST, FIRST, MIDDLE): Hussman Corporation/SECO Products - Dennis Dubitsky

ADDRESS: 12999 St Charles Rock Rd

CITY	STATE	ZIP	TELEPHONE
St Louis	MO	63044	

WELL LOCATION

COUNTY: Franklin

____ ¼, ____ ¼, ____ ¼, Section 25 Township 44N Range 01 (E)W

CONTRACTOR INFORMATION

CONTRACTOR NAME	PERMIT NUMBER
Shannon & Wilson - LaRRY Rosen	002004

ADDRESS: 4500 Olive Blvd

CITY	STATE	ZIP	TELEPHONE
St Louis	MO	63141	314-872-8170

Type of Variance: Variance granted to plug monitoring well RW-1 by filling the well with leaving the screen in place and grouting the well full length.

RULE NUMBER MODIFIED: 10 CSR 23- 4.08B(1)(B)

Reason for Variance: The coupling connecting the casing and screen broke as the casing was being pulled. The cuttings generated from drilling the screen out would require disposal as hazardous waste.

VARIANCE APPROVED (DATE): 09/10/96	BY: Michael J Davidsmith
COPY SENT TO OWNER (DATE): 09/16/96	BY: Tonya Schafer
COPY SENT TO CONTRACTOR (DATE): 09/16/96	BY: Tonya Schafer

MO 780-1422 (11-93)

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

REGISTRATION RECORD

OFFICE USE ONLY	ATE RECEIVED
REF. NO. 104966	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

ORMATION SUPPLIED BY OWNER

Hussmann Corporation — TELEPHONE 314-298-6541

ESS: 999 St. Charles Rock Road — CITY: St. Louis — STATE: MO — ZIP CODE: 63044

ESS OF WELL SITE (IF DIFFERENT THAN ABOVE): 5025 Old Highway 100 East — CITY: Washington — STATE: MO — ZIP CODE: 63090

ER STATUS: ☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☒ OTHER (SPECIFY) Responsible Party

OSE OF REGISTRATION FORM
☒ ABANDONED WELL ☐ TEST HOLE REPORT
☐ VELL RECONSTRUCTION ☐ OTHER _____

EXISTING WELL CERTIFICATION NUMBER: NA (Designated RW-1)

SIGNATURE (WELL OWNER): [signature] DATE: 4/1/96

ORMATION SUPPLIED BY CONTRACTOR

LOCATION OF WELL
SHOW LOCATION IN SECTION PLAT

COUNTY FRANKLIN
ELEVATION ~400
AREA NO. 1

SMALLEST ¼ LARGEST ¼
_____¼ _____¼ _____¼ _____¼

SEC. 35 TWN. 44 N,RNG. R1W E OR W

38 ° 32 ' 29 " LONG. 90 ° 58 ' 36 "

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS
SEE ATTACHED SITE PLAN/LOCATION PLAN

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL
E ATTACHED SITE PLAN/LOCATION PLAN

CONTRACTOR'S NAME ▶ Lawrence Rosen / United Geoscience

PERMIT NUMBER ▶ 002004 RM / 001875 WPM

ABANDONMENT OF WELLS

DEPTH OF THE WELL: 0' below ground surface
DATE ABANDONED: 2/2/96

ER USE OF WELL
☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ PUBLIC WATER SUPPLY
☐ ULTI-FAMILY ☐ EXPLORATORY TEST HOLE
☐ EAT PUMP ☐ MONITORING
☐ RRIGATION ☒ OTHER Recovery

DATE ORIGINALLY DRILLED: 990
PUMP REMOVED FROM WELL? ☒ YES ☐ NO

INAL DRILLER (IF KNOWN): Lawrence C. Rosen

DESCRIBE METHOD USED TO PLUG WELL
er Plugged - A replacement well was
stalled in the existing location after
rilling out old well

MENTS (REASON FOR PLUGGING, KNOWN CONTAMINANTS, ETC.)
ell collapsed below 35'.

W THE WELL ABANDONED BECAUSE OF HOOKING UP TO A PUBLIC OR RURAL WATER PLY DISTRICT?
YES ☒ NO

CHECK THE BOX WHICH APPLIES

☐ I HEREBY CERTIFY THAT THE WELL HEREIN SCRIBED WAS ABANDONED IN ACCORDCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE ABANDONMENT OF WELLS.

☐ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS REPAIRED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE REPAIR OF WELLS.

TRACTOR'S SIGNATURE: Lawrence C. Rosen — DATE: 3/25/96

WELL RECONSTRUCTION

TYPE OF REPAIR
☐ RAISED CASING ☐ LINING OF WELL
☐ DEEPENING OF WELL ☐ OTHER _____

RAISED CASING INFORMATION
LENGTH OF CASING ADDED FT.
METHOD OF ATTACHMENT
STEEL CASING ☐ THREADED ☐ WELDED ☐ COUPLED
PLASTIC CASING ☐ FUSED ☐ GLUED

LINER DETAILS
PURPOSE OF LINER
☐ USED ONLY TO HOLD BACK FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
DIAMETER OF LINER IN.
WEIGHT OR SDR #

MEASURED DEPTH FROM SURFACE TO THE TOP OF LINER FT.
MEASURED DEPTH FROM SURFACE TO BOTTOM OF LINER FT.
DIAMETER OF WELL CASING IN.
MATERIAL ☐ PLASTIC ☐ STEEL
JOINTS ☐ THREADED ☐ GLUED ☐ WELDED

LINER PACKER DETAILS
TYPE USED ☐ NONE ☐ RUBBER BOOT
DEPTHS SET: PACKER 1 FT. PACKER 2 FT. PACKER 3 FT.

LINER GROUT DETAILS
POSITION OF SEAL ☐ FULL LENGTH ☐ BETWEEN PACKERS
MATERIAL ☐ CEMENT SLURRY BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS

DEPTH PUMP WAS SET GPM _____
DEPTH FROM SURFACE TO TOP OF THE GROUT SEAL FT.
DEPTH FROM SURFACE TO BOTTOM OF THE GROUT SEAL FT.

DEEPENING OF WELL INFORMATION	DEPTH	FORMATION DESCRIPTION	YIELD
WELL WAS DEEPENED			
FROM FT. DEEP			
TO FT. DEEP			
WAS THE WELL DISINFECTED? ☐ YES ☐ NO			

RECYCLED PAPER

80-1414 (11-93) DISTRIBUTION: WHITE/CONTRACTOR CANARY/DIVISION PINK/OWNER
MAIL CANARY COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65401 ENCLOSE $5 FOR REGISTRATION FEE WITHIN 60 DAYS AFTER WORK COMPLETION

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

REGISTRATION RECORD

OFFICE USE ONLY	
REF. NO. 104967	DATE RECEIVED
ROUTE	CHECK NO.
STATE WELL NUMBER	TRANSMITTAL NO.
CHECKED BY	CROSS REFERENCE NO.
APPROVED BY	ENTERED Ph 1 Ph 2 Ph 3 / DATE APPROVED

FORMATION SUPPLIED BY OWNER

NAME: HUSSMANN CORPORATION — TELEPHONE: 314-298-6541

ADDRESS: 2999 St CHARLES ROCK ROAD — CITY: St LOUIS — STATE: MO — ZIP CODE: 63044

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): 5025 Old Highway 100 EAST — CITY: WASHINGTON — STATE: MO — ZIP CODE: 63090

OWNER STATUS: ☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☒ OTHER (SPECIFY) Responsible PARTY

PURPOSE OF REGISTRATION FORM: ☒ ABANDONED WELL ☐ WELL RECONSTRUCTION ☐ TEST HOLE REPORT ☐ OTHER

EXISTING WELL CERTIFICATION NUMBER: NA (Designated MW-1)

SIGNATURE (WELL OWNER): [signature] DATE: 4/1/96

FORMATION SUPPLIED BY CONTRACTOR

LOCATION OF WELL (SHOW LOCATION IN SECTION PLAT)

COUNTY FRANKLIN

ELEVATION ~480 (480.3)

AREA NO. 1

SMALLEST ¼ ____ ¼ ____ ¼ ____ ¼ LARGEST ¼

SEC. 25 TWN. 44 N,RNG. R1W E OR W

LAT. 38 ° 32 ' 29 " LONG. 90 ° 58 ' 36 "

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

See Attached Location & Site Plan

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL

See attached Location & Site Plan

CONTRACTOR'S NAME: Lawrence Rosen / United Geoscience

PERMIT NUMBER: 002004PM / 001875 WPM

ABANDONMENT OF WELLS

DEPTH OF THE WELL: 3.5' below ground surface

DATE ABANDONED: 2/1/96

FORMER USE OF WELL: ☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ MULTI-FAMILY ☐ HEAT PUMP ☐ IRRIGATION ☐ PUBLIC WATER SUPPLY ☐ EXPLORATORY TEST HOLE ☒ MONITORING ☐ OTHER

DATE ORIGINALLY DRILLED: 9/22/92

PUMP REMOVED FROM WELL? ☐ YES ☐ NO

ORIGINAL DRILLER (IF KNOWN): —

DESCRIBE METHOD USED TO PLUG WELL: per variance #00401 - Removed entire length of screen and casing

COMMENTS (REASON FOR PLUGGING, KNOWN CONTAMINANTS, ETC.): No longer required for monitoring

WAS THE WELL ABANDONED BECAUSE OF HOOKING UP TO A PUBLIC OR RURAL WATER SUPPLY DISTRICT? ☐ YES ☒ NO

CHECK THE BOX WHICH APPLIES

☒ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS ABANDONED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE ABANDONMENT OF WELLS.

☐ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS REPAIRED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE REPAIR OF WELLS.

CONTRACTOR'S SIGNATURE: Lawrence C. Rosen — DATE: 3/25/96

WELL RECONSTRUCTION

TYPE OF REPAIR: ☐ RAISED CASING ☐ DEEPENING OF WELL ☐ LINING OF WELL ☐ OTHER

RAISED CASING INFORMATION: LENGTH OF CASING ADDED FT. — METHOD OF ATTACHMENT — STEEL CASING ☐ THREADED ☐ WELDED ☐ COUPLED — PLASTIC CASING ☐ FUSED ☐ GLUED

LINER DETAILS: PURPOSE OF LINER ☐ USED ONLY TO HOLD BACK FORMATION ☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS — DIAMETER OF LINER IN. — WEIGHT OR SDR #

MEASURED DEPTH FROM SURFACE TO THE TOP OF LINER FT. — DIAMETER OF WELL CASING IN. — MATERIAL ☐ PLASTIC ☐ STEEL

MEASURED DEPTH FROM SURFACE TO BOTTOM OF LINER FT. — JOINTS ☐ GLUED ☐ THREADED ☐ WELDED

LINER PACKER DETAILS: TYPE USED ☐ NONE ☐ RUBBER BOOT — DEPTHS SET: PACKER 1 FT. / PACKER 2 FT. / PACKER 3 FT.

LINER GROUT DETAILS: POSITION OF SEAL ☐ FULL LENGTH ☐ BETWEEN PACKERS — MATERIAL ☐ CEMENT SLURRY ☐ BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS

DEPTH PUMP WAS SET GPM ____ — DEPTH FROM SURFACE TO TOP OF THE GROUT SEAL FT. — DEPTH FROM SURFACE TO BOTTOM OF THE GROUT SEAL FT.

DEEPENING OF WELL INFORMATION

	DEPTH	FORMATION DESCRIPTION	YIELD
WELL WAS DEEPENED FROM FT. DEEP TO FT. DEEP			

WAS THE WELL DISINFECTED? ☐ YES ☐ NO

RECYCLED PAPER

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

REGISTRATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 104968	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

INFORMATION SUPPLIED BY OWNER

NAME: HUSSMANN CORPORATION — TELEPHONE: 314-298-6541

ADDRESS: 2999 St. Charles Rock Road — CITY: St Louis — STATE: MO — ZIP CODE: 63044

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): 5025 Old Hwy 100 East — CITY: WASHINGTON — STATE: MO — ZIP CODE: 63090

OWNER STATUS: ☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☒ OTHER (SPECIFY) Responsible Party

PURPOSE OF REGISTRATION FORM
☒ ABANDONED WELL ☐ TEST HOLE REPORT
☐ WELL RECONSTRUCTION ☐ OTHER _____

EXISTING WELL CERTIFICATION NUMBER: NA (Designated MD-2)

SIGNATURE (WELL OWNER): [signature] DATE: 4/1/96

INFORMATION SUPPLIED BY CONTRACTOR

LOCATION OF WELL SHOW LOCATION IN SECTION PLAT

COUNTY FRANKLIN
ELEVATION ~480
AREA NO. 1

SMALLEST ¼ LARGEST ¼

_____¼ _____¼ _____¼ _____¼

SEC. 25 TWN. 44 N,RNG. R1W E OR W

LAT. 38° 32' 29" LONG. 90° 58' 36"

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

See Attached Location + Site Plan

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL

See attached Location + Site Plan

CONTRACTOR'S NAME ▶ Lawrence Rosen / United Geoscience

PERMIT NUMBER ▶ 002004PM / 001875 WPM

ABANDONMENT OF WELLS

DEPTH OF THE WELL: 38' below ground surface — DATE ABANDONED: 2/1/96

FORMER USE OF WELL
☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ PUBLIC WATER SUPPLY
☐ MULTI-FAMILY ☐ EXPLORATORY TEST HOLE
☐ HEAT PUMP ☒ MONITORING
☐ IRRIGATION ☐ OTHER _____

DATE ORIGINALLY DRILLED: 8/88 — PUMP REMOVED FROM WELL? ☐ YES ☐ NO

ORIGINAL DRILLER (IF KNOWN): Geotechnology

DESCRIBE METHOD USED TO PLUG WELL: per variance #00401

COMMENTS (REASON FOR PLUGGING, KNOWN CONTAMINANTS, ETC.): No longer required for monitoring

WAS THE WELL ABANDONED BECAUSE OF HOOKING UP TO A PUBLIC OR RURAL WATER SUPPLY DISTRICT?
☐ YES ☒ NO

CHECK THE BOX WHICH APPLIES

☒ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS ABANDONED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE ABANDONMENT OF WELLS.

☐ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS REPAIRED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE REPAIR OF WELLS.

CONTRACTOR'S SIGNATURE: [signature] DATE: 3/25/96

WELL RECONSTRUCTION

TYPE OF REPAIR
☐ RAISED CASING ☐ LINING OF WELL
☐ DEEPENING OF WELL ☐ OTHER _____

RAISED CASING INFORMATION
LENGTH OF CASING ADDED _____ FT.
METHOD OF ATTACHMENT
STEEL CASING ☐ THREADED ☐ WELDED ☐ COUPLED
PLASTIC CASING ☐ FUSED ☐ GLUED

LINER DETAILS
PURPOSE OF LINER
☐ USED ONLY TO HOLD BACK FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
DIAMETER OF LINER _____ IN.
WEIGHT OR SDR # _____

MEASURED DEPTH FROM SURFACE TO THE TOP OF LINER _____ FT.
DIAMETER OF WELL CASING _____ IN.
MATERIAL ☐ PLASTIC ☐ STEEL
MEASURED DEPTH FROM SURFACE TO BOTTOM OF LINER _____ FT.
JOINTS ☐ GLUED ☐ THREADED ☐ WELDED

LINER PACKER DETAILS
TYPE USED ☐ NONE ☐ RUBBER BOOT
DEPTHS SET: PACKER 1 _____ FT. PACKER 2 _____ FT. PACKER 3 _____ FT.

LINER GROUT DETAILS
POSITION OF SEAL ☐ FULL LENGTH ☐ BETWEEN PACKERS
MATERIAL ☐ CEMENT SLURRY BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS

DEPTH PUMP WAS SET GPM _____
DEPTH FROM SURFACE TO TOP OF THE GROUT SEAL _____ FT.
DEPTH FROM SURFACE TO BOTTOM OF THE GROUT SEAL _____ FT.

DEEPENING OF WELL INFORMATION

	DEPTH	FORMATION DESCRIPTION	YIELD
WELL WAS DEEPENED FROM FT. DEEP TO FT. DEEP			
WAS THE WELL DISINFECTED? ☐ YES ☐ NO			

MO 780-1414 (11-93) DISTRIBUTION: WHITE/CONTRACTOR CANARY/DIVISION PINK/OWNER
MAIL CANARY COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65401 ENCLOSE $5 FOR REGISTRATION FEE WITHIN 60 DAYS AFTER WORK COMPLETION

RECYCLED PAPER

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

REGISTRATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 104969	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

INFORMATION SUPPLIED BY OWNER

NAME: Hussmann Corporation
TELEPHONE: 314-298-6541

ADDRESS: 2999 St Charles Rock Road
CITY: St Louis
STATE: MO
ZIP CODE: 63044

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): 5025 Old Hwy 100 East
CITY: Washington
STATE: MO
ZIP CODE: 63090

OWNER STATUS:
☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☐ OTHER (SPECIFY) Responsible Party

PURPOSE OF REGISTRATION FORM
☑ ABANDONED WELL ☐ TEST HOLE REPORT
☐ WELL RECONSTRUCTION ☐ OTHER

EXISTING WELL CERTIFICATION NUMBER: NA (Designated MD-1)
SIGNATURE (WELL OWNER): [signature] DATE: 4/1/96

INFORMATION SUPPLIED BY CONTRACTOR

LOCATION OF WELL
SHOW LOCATION IN SECTION PLAT

COUNTY: Franklin
ELEVATION: ~480
AREA NO.: 1

SMALLEST ¼ LARGEST ¼
___¼ ___¼ ___¼ ___¼
SEC. 25 TWN. 44 N,RNG. R1W E OR W
LAT. 38° 32' 29" LONG. 90° 58' 36"

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS
See Attached Location & Site Plan

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL
See attached Location and Site Plan

CONTRACTOR'S NAME: Lawrence Rosen / United Geoscience
PERMIT NUMBER: 002004 PM / 001875 WPM

ABANDONMENT OF WELLS

DEPTH OF THE WELL: 18' below ground surface
DATE ABANDONED: 2/1/96

FORMER USE OF WELL
☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ PUBLIC WATER SUPPLY
☐ MULTI-FAMILY ☐ EXPLORATORY TEST HOLE
☐ HEAT PUMP ☒ MONITORING
☐ IRRIGATION ☐ OTHER

DATE ORIGINALLY DRILLED: 8/88
PUMP REMOVED FROM WELL? ☐ YES ☐ NO

ORIGINAL DRILLER (IF KNOWN): Geotechnology

DESCRIBE METHOD USED TO PLUG WELL: Per variance # 00401

COMMENTS (REASON FOR PLUGGING, KNOWN CONTAMINANTS, ETC.): No longer required for monitoring

WAS THE WELL ABANDONED BECAUSE OF HOOKING UP TO A PUBLIC OR RURAL WATER SUPPLY DISTRICT?
☐ YES ☒ NO

CHECK THE BOX WHICH APPLIES

☒ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS ABANDONED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE ABANDONMENT OF WELLS.

☐ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS REPAIRED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE REPAIR OF WELLS.

CONTRACTOR'S SIGNATURE: Lawrence C. Rosen
DATE: 3/25/96

WELL RECONSTRUCTION

TYPE OF REPAIR
☐ RAISED CASING ☐ LINING OF WELL
☐ DEEPENING OF WELL ☐ OTHER

RAISED CASING INFORMATION
LENGTH OF CASING ADDED: FT.
METHOD OF ATTACHMENT
STEEL CASING ☐ THREADED ☐ WELDED ☐ COUPLED
PLASTIC CASING ☐ FUSED ☐ GLUED

LINER DETAILS
PURPOSE OF LINER
☐ USED ONLY TO HOLD BACK FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
DIAMETER OF LINER: IN.
WEIGHT OR SDR #

MEASURED DEPTH FROM SURFACE TO THE TOP OF LINER: FT.
DIAMETER OF WELL CASING: IN.
MATERIAL ☐ PLASTIC ☐ STEEL
MEASURED DEPTH FROM SURFACE TO BOTTOM OF LINER: FT.
JOINTS ☐ GLUED ☐ THREADED ☐ WELDED

LINER PACKER DETAILS
TYPE USED ☐ NONE ☐ RUBBER BOOT
DEPTHS SET: PACKER 1 FT. PACKER 2 FT. PACKER 3 FT.

LINER GROUT DETAILS
POSITION OF SEAL ☐ FULL LENGTH ☐ BETWEEN PACKERS
MATERIAL ☐ CEMENT SLURRY ☐ BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS

DEPTH PUMP WAS SET: GPM ____
DEPTH FROM SURFACE TO TOP OF THE GROUT SEAL: FT.
DEPTH FROM SURFACE TO BOTTOM OF THE GROUT SEAL: FT.

DEEPENING OF WELL INFORMATION

	DEPTH	FORMATION DESCRIPTION	YIELD
WELL WAS DEEPENED FROM FT. DEEP TO FT. DEEP			
WAS THE WELL DISINFECTED? ☐ YES ☐ NO			

FORM 780-1414 (11-93)
DISTRIBUTION: WHITE/CONTRACTOR CANARY/DIVISION PINK/OWNER
MAIL CANARY COPY TO: DEPARTMENT OF NATURAL RESOURCES, P.O. BOX 250, ROLLA, MO 65401 ENCLOSE $5 FOR REGISTRATION FEE WITHIN 60 DAYS AFTER WORK COMPLETION

RECYCLED PAPER

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

REGISTRATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 104970	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

FORMATION SUPPLIED BY OWNER

NAME: Hussmann Corporation — TELEPHONE: 314-298-6541

ADDRESS: 2999 St Charles Rock Road — CITY: St Louis — STATE: MO — ZIP CODE: 63044

ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): 5025 Old Hwy 100 East — CITY: Washington — STATE: MO — ZIP CODE: 63090

OWNER STATUS: ☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☐ OTHER (SPECIFY) Responsible Party

PURPOSE OF REGISTRATION FORM
☒ ABANDONED WELL ☐ TEST HOLE REPORT
☐ WELL RECONSTRUCTION ☐ OTHER _____

EXISTING WELL CERTIFICATION NUMBER: NA (Designated SS-1)

SIGNATURE (WELL OWNER): [signature] DATE: 4/11/96

FORMATION SUPPLIED BY CONTRACTOR

LOCATION OF WELL
SHOW LOCATION IN SECTION PLAT

COUNTY: Franklin
ELEVATION: ~480
AREA NO.: 1

SMALLEST ¼ LARGEST ¼
_____¼ _____¼ _____¼ _____¼

SEC. 25 TWN. 44 N,RNG. R 1 W E OR W

LAT. 38° 32' 29" LONG. 90° 58' 36"

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS
See Attached Location + Site Plan

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL
See attach location + Site Plan

CONTRACTOR'S NAME: Lawrence Rosen / United Geoscience

PERMIT NUMBER: 002004 PM / 001875 WPM

ABANDONMENT OF WELLS

DEPTH OF THE WELL: 5' below ground surface
DATE ABANDONED: 2/1/96

FORMER USE OF WELL
☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ PUBLIC WATER SUPPLY
☐ MULTI-FAMILY ☐ EXPLORATORY TEST HOLE
☐ HEAT PUMP ☒ MONITORING
☐ IRRIGATION ☐ OTHER _____

DATE ORIGINALLY DRILLED: 8/88
PUMP REMOVED FROM WELL? ☐ YES ☐ NO

ORIGINAL DRILLER (IF KNOWN): Geotechnology

DESCRIBE METHOD USED TO PLUG WELL
Per variance # 00401

COMMENTS (REASON FOR PLUGGING, KNOWN CONTAMINANTS, ETC.)
No longer required for monitoring

WAS THE WELL ABANDONED BECAUSE OF HOOKING UP TO A PUBLIC OR RURAL WATER SUPPLY DISTRICT?
☐ YES ☒ NO

CHECK THE BOX WHICH APPLIES

☒ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS ABANDONED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE ABANDONMENT OF WELLS.

☐ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS REPAIRED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE REPAIR OF WELLS.

CONTRACTOR'S SIGNATURE: Lawrence C. Rosen DATE: 3/25/96

WELL RECONSTRUCTION

TYPE OF REPAIR
☐ RAISED CASING ☐ LINING OF WELL
☐ DEEPENING OF WELL ☐ OTHER _____

RAISED CASING INFORMATION
LENGTH OF CASING ADDED: _____ FT.
METHOD OF ATTACHMENT
STEEL CASING ☐ THREADED ☐ WELDED ☐ COUPLED
PLASTIC CASING ☐ FUSED ☐ GLUED

LINER DETAILS
PURPOSE OF LINER
☐ USED ONLY TO HOLD BACK FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
DIAMETER OF LINER: _____ IN.
WEIGHT OR SDR #: _____

MEASURED DEPTH FROM SURFACE TO THE TOP OF LINER: _____ FT.
DIAMETER OF WELL CASING: _____ IN.
MATERIAL ☐ PLASTIC ☐ STEEL
MEASURED DEPTH FROM SURFACE TO BOTTOM OF LINER: _____ FT.
JOINTS ☐ GLUED ☐ THREADED ☐ WELDED

LINER PACKER DETAILS
TYPE USED ☐ NONE ☐ RUBBER BOOT
DEPTHS SET: PACKER 1 _____ FT. PACKER 2 _____ FT. PACKER 3 _____ FT.

LINER GROUT DETAILS
POSITION OF SEAL ☐ FULL LENGTH ☐ BETWEEN PACKERS
MATERIAL ☐ CEMENT SLURRY ☐ BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS
DEPTH PUMP WAS SET: GPM _____
DEPTH FROM SURFACE TO TOP OF THE GROUT SEAL: _____ FT.
DEPTH FROM SURFACE TO BOTTOM OF THE GROUT SEAL: _____ FT.

DEEPENING OF WELL INFORMATION

	DEPTH	FORMATION DESCRIPTION	YIELD
WELL WAS DEEPENED FROM _____ FT. DEEP TO _____ FT. DEEP			

WAS THE WELL DISINFECTED? ☐ YES ☐ NO

MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

REGISTRATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 104971	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

ORMATION SUPPLIED BY OWNER

Hussmann Corporation — TELEPHONE 314-298-6541

ESS	CITY	STATE	ZIP CODE
99 St Charles Rock Road	St. Louis MO	MO	63044
ESS OF WELL SITE (IF DIFFERENT THAN ABOVE)	CITY	STATE	ZIP CODE
5025 Old Hwy 100 East	Washington	MO	63090

ER STATUS: ☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☐ OTHER (SPECIFY) ~~Responsible Party~~

OSE OF REGISTRATION FORM
☒ ABANDONED WELL ☐ TEST HOLE REPORT
☐ WELL RECONSTRUCTION ☐ OTHER

EXISTING WELL CERTIFICATION NUMBER: NA (Designated SS93)
SIGNATURE (WELL OWNER): [signature] DATE: 4/1/96

ORMATION SUPPLIED BY CONTRACTOR

CATION OF WELL
SHOW LOCATION IN SECTION PLAT

COUNTY FRANKLIN
ELEVATION ~490
AREA NO. 1

SMALLEST ¼ LARGEST ¼
____¼ ____¼ ____¼ ____¼
SEC. 25 TWN. 44 N,RNG. R / W E OR W
L 38° 32' 29" LONG. 90° 58' 36"

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS
SEE ATTACHED LOCATION & SITE PLAN

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL
SEE ATTACHED LOCATION & SITE PLAN

CONTRACTOR'S NAME ▶ Lawrence Rosen / United Geoscience
PERMIT NUMBER ▶ 002004PM / 001875WPM

ABANDONMENT OF WELLS

DEPTH OF THE WELL: ' below ground surface
DATE ABANDONED: 2/1/96

ER USE OF WELL
☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ PUBLIC WATER SUPPLY
☐ MULTI-FAMILY ☐ EXPLORATORY TEST HOLE
EAT PUMP ☒ MONITORING
RRIGATION ☐ OTHER

DATE ORIGINALLY DRILLED: 8/88
PUMP REMOVED FROM WELL? ☐ YES ☐ NO

INAL DRILLER (IF KNOWN)
ECTECHNOLOGY

DESCRIBE METHOD USED TO PLUG WELL
Per Variance #00401

MENTS (REASON FOR PLUGGING, KNOWN CONTAMINANTS, ETC.)
No longer required for monitoring

WAS THE WELL ABANDONED BECAUSE OF HOOKING UP TO A PUBLIC OR RURAL WATER PLY DISTRICT?
YES ☒ NO

CHECK THE BOX WHICH APPLIES

☒ EREBY CERTIFY THAT THE WELL HEREIN SCRIBED WAS ABANDONED IN ACCORD-CE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE ABANDONMENT OF WELLS.

☐ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS REPAIRED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE REPAIR OF WELLS.

TRACTOR'S SIGNATURE: [signature] Rosen
DATE: 3/25/96

WELL RECONSTRUCTION

TYPE OF REPAIR
☐ RAISED CASING ☐ LINING OF WELL
☐ DEEPENING OF WELL ☐ OTHER

RAISED CASING INFORMATION
LENGTH OF CASING ADDED FT.
METHOD OF ATTACHMENT
STEEL CASING ☐ THREADED ☐ WELDED ☐ COUPLED
PLASTIC CASING ☐ FUSED ☐ GLUED

LINER DETAILS
PURPOSE OF LINER
☐ USED ONLY TO HOLD BACK FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
DIAMETER OF LINER IN.
WEIGHT OR SDR #

MEASURED DEPTH FROM SURFACE TO THE TOP OF LINER FT.
MEASURED DEPTH FROM SURFACE TO BOTTOM OF LINER FT.
DIAMETER OF WELL CASING IN.
MATERIAL ☐ PLASTIC ☐ STEEL
JOINTS ☐ GLUED ☐ THREADED ☐ WELDED

LINER PACKER DETAILS
TYPE USED ☐ NONE ☐ RUBBER BOOT

DEPTHS SET	PACKER 1	PACKER 2	PACKER 3
	FT.	FT.	FT.

LINER GROUT DETAILS
ROSITION OF SEAL ☐ FULL LENGTH ☐ BETWEEN PACKERS
MATERIAL ☐ CEMENT SLURRY BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS

DEPTH PUMP WAS SET GPM ____
DEPTH FROM SURFACE TO TOP OF THE GROUT SEAL FT.
DEPTH FROM SURFACE TO BOTTOM OF THE GROUT SEAL FT.

DEEPENING OF WELL INFORMATION	DEPTH	FORMATION DESCRIPTION	YIELD
WELL WAS DEEPENED			
FROM FT. DEEP			
TO FT. DEEP			
WAS THE WELL DISINFECTED? ☐ YES ☐ NO			

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

REGISTRATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 104972	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

INFORMATION SUPPLIED BY OWNER

NAME		TELEPHONE
HUSSMANN CORPORATION		314-298-6541
ADDRESS: 2999 St Charles Rock Road	CITY: St Louis MO	STATE: MO ZIP CODE: 63044
ADDRESS OF WELL SITE (IF DIFFERENT THAN ABOVE): 5025 Old Hwy 100 East	CITY: Washington	STATE: MO ZIP CODE: 63090

OWNER STATUS: ☐ PRIVATE HOME OWNER ☐ BUILDER ☐ DEVELOPER ☒ OTHER (SPECIFY) Responsible Party

PURPOSE OF REGISTRATION FORM
☒ ABANDONED WELL ☐ TEST HOLE REPORT
☐ WELL RECONSTRUCTION ☐ OTHER _____

EXISTING WELL CERTIFICATION NUMBER: NA (Designated SS-2)

SIGNATURE (WELL OWNER): [signature] DATE: 4/1/96

INFORMATION SUPPLIED BY CONTRACTOR

LOCATION OF WELL
SHOW LOCATION IN SECTION PLAT

COUNTY: FRANKLIN
ELEVATION: ~480
AREA NO.: 1

SMALLEST ¼ LARGEST ¼
_____¼ _____¼ _____¼ _____¼

SEC. 25 TWN. 44 N,RNG. R1W E OR W
38° 32' 29" LONG. 90° 58' 36"

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS
See attached location + site plan

DESCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT THE WELL
See attached location + site plan

CONTRACTOR'S NAME ▶ Lawrence Rosen / United Geoscience

PERMIT NUMBER ▶ 002004PM / 001875 WPM

ABANDONMENT OF WELLS

DEPTH OF THE WELL: 0' below ground surface
DATE ABANDONED: 2/1/96

PRIMER USE OF WELL
☐ DOMESTIC (1 TO 3 CONNECTIONS) ☐ PUBLIC WATER SUPPLY
☐ MULTI-FAMILY ☐ EXPLORATORY TEST HOLE
☐ HEAT PUMP ☒ MONITORING
☐ IRRIGATION ☐ OTHER _____

DATE ORIGINALLY DRILLED: 8/88
PUMP REMOVED FROM WELL? ☐ YES ☐ NO

ORIGINAL DRILLER (IF KNOWN)
Geotechnology

DESCRIBE METHOD USED TO PLUG WELL
per variance # 00401

COMMENTS (REASON FOR PLUGGING, KNOWN CONTAMINANTS, ETC.)
No longer required for monitoring

WAS THE WELL ABANDONED BECAUSE OF HOOKING UP TO A PUBLIC OR RURAL WATER SUPPLY DISTRICT?
YES ☒ NO

CHECK THE BOX WHICH APPLIES

☐ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS ABANDONED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE ABANDONMENT OF WELLS.

☐ I HEREBY CERTIFY THAT THE WELL HEREIN DESCRIBED WAS REPAIRED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE REPAIR OF WELLS.

CONTRACTOR'S SIGNATURE: Lawrence C. Rosen DATE: 3/25/96

WELL RECONSTRUCTION

TYPE OF REPAIR
☐ RAISED CASING ☐ LINING OF WELL
☐ DEEPENING OF WELL ☐ OTHER _____

RAISED CASING INFORMATION
LENGTH OF CASING ADDED _____ FT.
METHOD OF ATTACHMENT
STEEL CASING ☐ THREADED ☐ WELDED ☐ COUPLED
PLASTIC CASING ☐ FUSED ☐ GLUED

LINER DETAILS
PURPOSE OF LINER
☐ USED ONLY TO HOLD BACK FORMATION
☐ USED TO SEAL OUT CONTAMINATION OR OTHER CONDITIONS
DIAMETER OF LINER _____ IN.
WEIGHT OR SDR # _____

MEASURED DEPTH FROM SURFACE TO THE TOP OF LINER _____ FT.
MEASURED DEPTH FROM SURFACE TO BOTTOM OF LINER _____ FT.
DIAMETER OF WELL CASING _____ IN.
MATERIAL ☐ PLASTIC ☐ STEEL
JOINTS ☐ GLUED ☐ THREADED ☐ WELDED

LINER PACKER DETAILS
TYPE USED ☐ NONE ☐ RUBBER BOOT
DEPTHS SET: PACKER 1 _____ FT. PACKER 2 _____ FT. PACKER 3 _____ FT.

LINER GROUT DETAILS
POSITION OF SEAL ☐ FULL LENGTH ☐ BETWEEN PACKERS
MATERIAL ☐ CEMENT SLURRY BENTONITE ☐ CHIPS ☐ GRANULAR ☐ PELLETS

DEPTH PUMP WAS SET GPM _____
DEPTH FROM SURFACE TO TOP OF THE GROUT SEAL _____ FT.
DEPTH FROM SURFACE TO BOTTOM OF THE GROUT SEAL _____ FT.

DEEPENING OF WELL INFORMATION

	DEPTH	FORMATION DESCRIPTION	YIELD
WELL WAS DEEPENED FROM FT. DEEP TO FT. DEEP			

WAS THE WELL DISINFECTED? ☐ YES ☐ NO

MO 780-1414 (11-93)

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

MONITORING WELL CERTIFICATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 103900	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

FORMATION SUPPLIED BY OWNER

E NAME	WELL NUMBER
Hussmann Corporation / SECO Products	RW-1

TE ADDRESS	CITY	STATE	ZIP CODE
1025 Old Hwy 100 East	Washington	MO	63090

ME	TELEPHONE
Dennis Dubitsky (Hussmann Corporation)	314-298-6541

ADDRESS	CITY	STATE	ZIP CODE
2999 St Charles Rock Road	St Louis	MO	63074

FORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

LOCATION OF WELL
OW LOCATION IN CTION PLAT

COUNTY Franklin
ELEVATION ~480
AREA NO. 1

SMALLEST ¼ LARGEST ¼

¼ ¼ ¼ ¼

SEC. 25 TWN. 44 N,RNG. R1W E OR W

LAT. 38° 32' 29" LONG. 90° 58' 36"

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

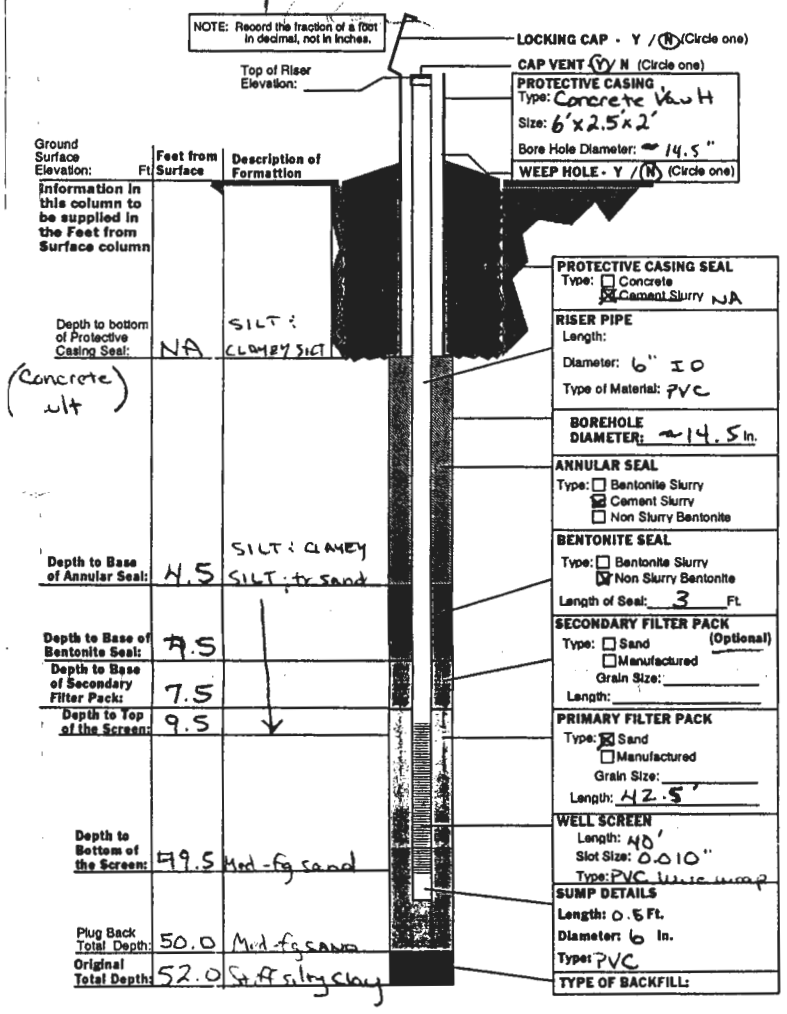
See attached Location Plan
+ site plan

SCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT

see attached location plan + site plan

MONITORING WELL INSTALLATION CONTRACTOR'S NAME
Lawrence Rosen (#002004 PM)
Shannon + Wilson

DRILLING CONTRACTOR'S NAME
United Geosciences



TYPE OF INSTALLATION
☐ ABOVE GROUND ☒ FLUSH MOUNT (Below)

STATIC WATER LEVEL
19' FEET FROM MEASURING POINT

DATE OF STATIC WATER LEVEL
2/9/96

ELEVATION OF MEASURING POINT
Top of casing

MEASURING POINT IS
☒ TOP OF RISER PIPE
☐ OTHER

DRILLING EQUIPMENT
☐ AIR ROTARY ☒ AUGER TYPE 10¼ ID HSA
☐ REVERSE ROTARY ☐ OTHER

CENTRALIZERS USED
☐ YES, AT
☐ STAINLESS STEEL
☐ OTHER
☒ NO

MULTIPLE CASED WELLS
SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETERS, AND GROUT USED.

DATE WELL CONSTRUCTION WAS COMPLETED
2/6/96

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS.

SIGNATURE (MONITORING WELL CONTRACTOR)
Lawrence C. Rosen

PERMIT NUMBER	DATE
#002004PM	3/25/96

SIGNATURE (DRILLING CONTRACTOR)

PERMIT NUMBER	DATE
01975 WPW	4/2/96

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

MONITORING WELL CERTIFICATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 103901	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

INFORMATION SUPPLIED BY OWNER

TE NAME	WELL NUMBER		
Seco Products / Hussmann Corporation	RW-6		
TE ADDRESS	CITY	STATE	ZIP CODE
025 Old Hwy 100 East	Washington	MO	63090
ME		TELEPHONE	
Dennis Pubitsky (Hussmann Corporation)		314-298-6541	
ADDRESS	CITY	STATE	ZIP CODE
2999 St Charles Rock Road	St Louis	MO	63044

FORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

LOCATION OF WELL
OW LOCATION IN CTION PLAT

COUNTY Franklin
ELEVATION ~490
AREA NO. 1

SMALLEST ¼ LARGEST ¼

SEC. 25 TWN. 44 N,RNG. R1W E OR W

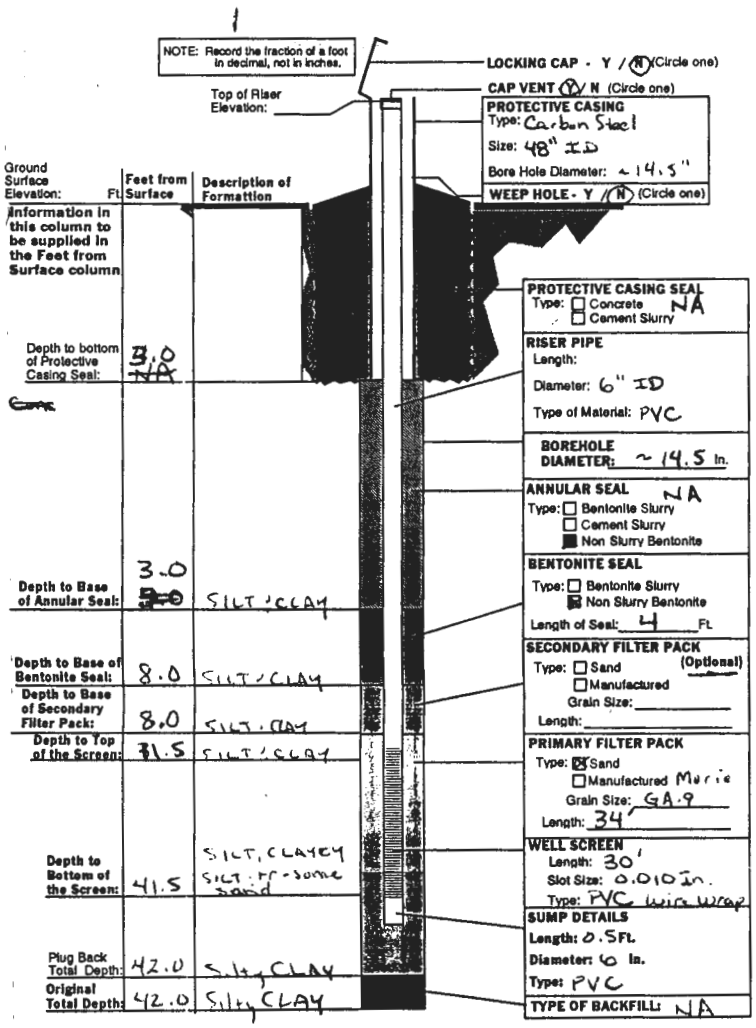
LAT. 38° 32' 29" LONG. 90° 58' 36"

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

See attached Location / Site Plan

SCRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT

See attached Location / Site Plan



MONITORING WELL INSTALLATION CONTRACTOR'S NAME
Lawrence Rosen
Shannon & Wilson

DRILLING CONTRACTOR'S NAME
United Geosciences

TYPE OF INSTALLATION
☐ ABOVE GROUND ☒ FLUSH MOUNT

STATIC WATER LEVEL
26 FEET FROM MEASURING POINT

DATE OF STATIC WATER LEVEL
2/15/96

ELEVATION OF MEASURING POINT
~490

MEASURING POINT IS
☒ TOP OF RISER PIPE
☐ OTHER

DRILLING EQUIPMENT
☐ AIR ROTARY ☒ AUGER TYPE 10¼" ID HSA
☐ REVERSE ROTARY ☐ OTHER

CENTRALIZERS USED
☐ YES, AT
☐ STAINLESS STEEL
☐ OTHER
☒ NO

MULTIPLE CASED WELLS
SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETERS, AND GROUT USED.

DATE WELL CONSTRUCTION WAS COMPLETED
2/7/96

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS.

SIGNATURE (MONITORING WELL CONTRACTOR)

PERMIT NUMBER	DATE
002004 PM	3/25/96

SIGNATURE (DRILLING CONTRACTOR)

PERMIT NUMBER	DATE
0197 Supp	4/3/96

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

MONITORING WELL CERTIFICATION RECORD

OFFICE USE ONLY	DATE RECEIVED
REF. NO. 103902	CHECK NO.
ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

FORMATION SUPPLIED BY OWNER

NAME		WELL NUMBER	
Seco Products / Hussmann Corporation		RW-7	
ADDRESS	CITY	STATE	ZIP CODE
525 Old Hwy 100 East	Washington	MO	63090
E		TELEPHONE	
Dennis Dobitsky (Hussmann)		314 298-6541	
ADDRESS	CITY	STATE	ZIP CODE
7999 St Charles Rock Road	St. Louis	MO	63044

FORMATION SUPPLIED BY MONITORING WELL CONTRACTOR

LOCATION OF WELL
W LOCATION IN
TION PLAT

COUNTY Franklin
ELEVATION ~490
AREA NO. 1

SMALLEST ¼ LARGEST ¼

____¼ ____¼ ____¼ ____¼

SEC. 25 TWN. 44 N,RNG. R1W E OR W

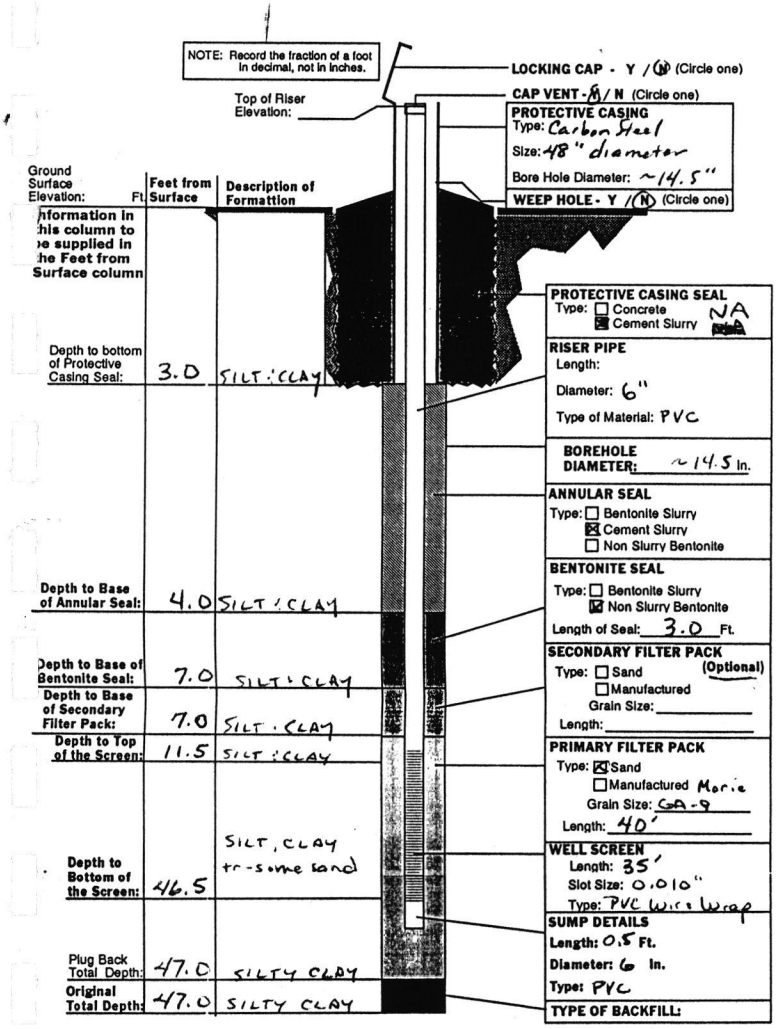
LAT. 38° 32' 29" LONG. 90° 58' 36"

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

See Attach Location & Site Plan

CRIBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT

See attached location and Site Plan



MONITORING WELL INSTALLATION CONTRACTOR'S NAME
Lawrence Rosen
Shannon & Wilson

DRILLING CONTRACTOR'S NAME
United Geosciences

TYPE OF INSTALLATION
☐ ABOVE GROUND ☒ FLUSH MOUNT

STATIC WATER LEVEL
28.5 FEET FROM MEASURING POINT

DATE OF STATIC WATER LEVEL
2/15/96

ELEVATION OF MEASURING POINT
~490'

MEASURING POINT IS
☒ TOP OF RISER PIPE
☐ OTHER

DRILLING EQUIPMENT
☐ AIR ROTARY ☒ AUGER TYPE 10¼ ID HSA
☐ REVERSE ROTARY ☐ OTHER

CENTRALIZERS USED
☐ YES, AT
☐ STAINLESS STEEL
☐ OTHER
☒ NO

MULTIPLE CASED WELLS
SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETERS, AND GROUT USED.

DATE WELL CONSTRUCTION WAS COMPLETED
2/8/96

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS.

SIGNATURE (MONITORING WELL CONTRACTOR)
Lawrence C. Rosen

PERMIT NUMBER	DATE
002004PM	3/25/96

SIGNATURE (DRILLING CONTRACTOR)

PERMIT NUMBER	DATE
U1975 exp.	4/7/96

0-1415 (12-93)

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGY AND LAND SURVEY

MONITORING WELL CERTIFICATION RECORD

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ROUTE	TRANSMITTAL NO.
STATE WELL NUMBER	CROSS REFERENCE NO.
CHECKED BY	ENTERED Ph 1 Ph 2 Ph 3
APPROVED BY	DATE APPROVED

ORMATION SUPPLIED BY OWNER

NAME	WELL NUMBER
SECO PRODUCTS, INC.	RW-1

ADDRESS	CITY	STATE	ZIP CODE
.5 Old Highway 100 East	Washington	MO	63090
HUSSMANN Corporation		TELEPHONE	
		314-298-6541	
ADDRESS	CITY	STATE	ZIP CODE
99 St. Charles Rock Road	St. Louis	MO	63044

RMATION SUPPLIED BY MONITORING WELL CONTRACTOR

LOCATION OF WELL

LOCATION IN ON PLAT

COUNTY FRANKLIN
ELEVATION ~480
AREA NO. 1

SMALLEST ¼ LARGEST ¼

____¼ ____¼ ____¼ ____¼

SEC. 25 TWN. 44 N,RNG. R1W E OR W

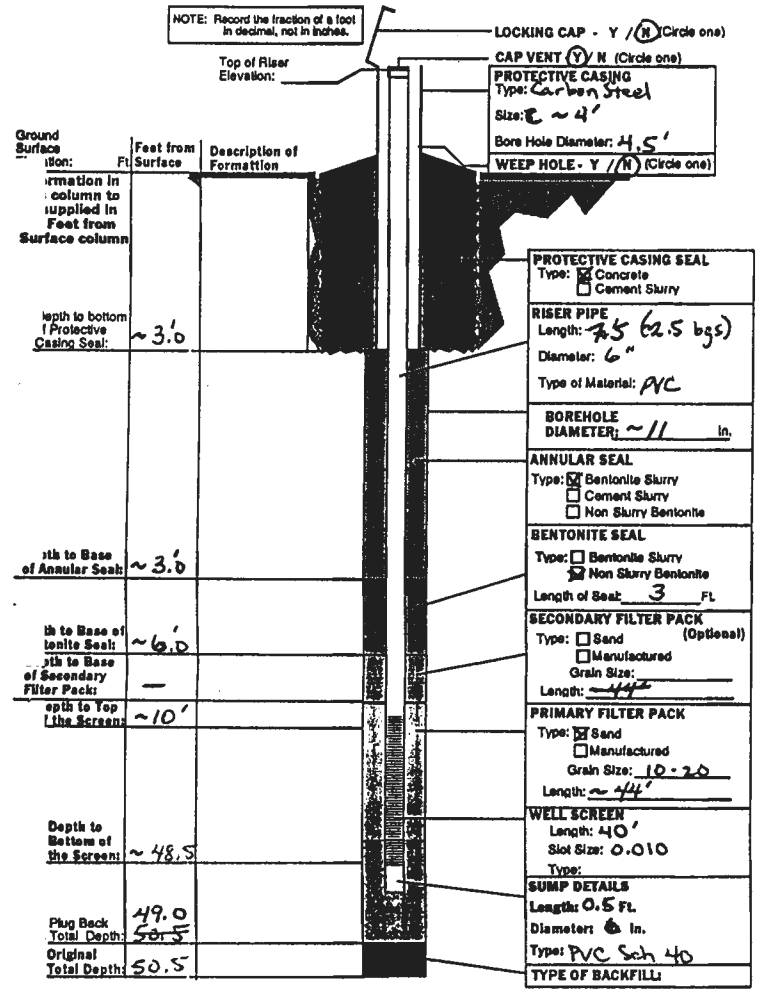
LAT. 38 ° 32 ' 29 " LONG. 90 ° 58 ' 36 "

SKETCH THE LOCATION TO THE WELL INCLUDING MILEAGE ON ALL ROADS TRAVELED FROM NEAREST TOWNS OR HIGHWAYS

SEE SITE PLAN

IBE LOCATION OF THE WELL SO WE WOULD BE ABLE TO VISIT IT

EE SITE PLAN



MONITORING WELL INSTALLATION CONTRACTOR'S NAME

LAWRENCE ROSEN

DRILLING CONTRACTOR'S NAME

United Geoscience

TYPE OF INSTALLATION
☐ ABOVE GROUND ☒ FLUSH MOUNT

STATIC WATER LEVEL
~18/20 FEET FROM MEASURING POINT

DATE OF STATIC WATER LEVEL
9/12/96

ELEVATION OF MEASURING POINT

MEASURING POINT IS
☒ TOP OF RISER PIPE
☐ OTHER

DRILLING EQUIPMENT
☐ AIR ROTARY ☒ AUGER TYPE 6¼" HSA
☐ REVERSE ROTARY ☐ OTHER

CENTRALIZERS USED
☐ YES, AT
☐ STAINLESS STEEL
☐ OTHER
☒ NO

MULTIPLE CASED WELLS
SUBMIT ADDITIONAL AS BUILT DIAGRAM SHOWING WELL CONSTRUCTION DETAILS INCLUDING TYPE AND SIZE OF ALL CASING, HOLE DIAMETERS, AND GROUT USED.

DATE WELL CONSTRUCTION WAS COMPLETED
9/12/96

I HEREBY CERTIFY THAT THE MONITORING WELL HEREIN DESCRIBED WAS CONSTRUCTED IN ACCORDANCE WITH THE DEPARTMENT OF NATURAL RESOURCES REQUIREMENTS FOR THE CONSTRUCTION OF MONITORING WELLS.

SIGNATURE (MONITORING WELL CONTRACTOR)
Lawrence C. Rosen

PERMIT NUMBER	DATE
002004	10/23/96

SIGNATURE (DRILLING CONTRACTOR)

PERMIT NUMBER	DATE

78 15 (12-93)

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Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

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Larry Rozen

SHANNON & WILSON

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CREVE COEUR MO 631[illegible]1

DELIVERY TO

TELEPHONE

Ms. Stephanie Doolan

X U.S. Environmental Prot. Agen Region VII

RCRA Permits & Compliance Branc

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